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A SANITARY SURVEY

of

ADAMS, MASSACHUSETTS.

John Steidl.

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A Sanitary Survey of Adams, Massachusetts.

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Preface.

The data for this survey was gathered in April, 1923, during the Easter vacation of the School. The day following the completion of this survey, and before I could organize the material, I returned to Boston and entered the hospital to begin a long period of illness.

With returning health it has been possible to work at odd moments toward the writing of this report. No attempt has been made, however, to keep it up to date, since that would have involved another trip to Adams and involved practically a new survey. The report is intended to cover conditions at the time it was made, and not since. No doubt some of the conditions that will be commented upon have already been changed, and some of the recommendations that will be made have been already carried into effect.

As an appendix to this report I have added the report of the Sewerage Committee of 1909, written by William Johnson, who was the consulting engineer when the proposed sewage system was planned. This inclusion seems justified in view of the high rank as a health problem taken by the sewage disposal problem of Adams, and in view of the excellence and clarity of ^{the} ~~this~~ report in elucidating this problem and its solution.

John Steidl.



BIRD'S EYE VIEW



CENTRE STREET



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Introduction.

In the westward march of early American civilization Adams, Massachusetts, was established as a military outpost under the name of Fort Massachusetts in 1741. The fort was built along an old Indian trail which ran through the present township, connecting the Hudson and Connecticut valleys. The trail was a leading outlet of the Berkshire country.

The fort was built as a protection against the French and Indians and was destroyed by them in 1746. It was rebuilt at once.

The district was originally divided into the east and west townships of Hoosuck, and the limits of these townships were explored and defined in 1749 at the instance of the General Assembly. The part which later became Adams was known as East Hoosuck.

In 1750 Captain Williams was granted two hundred acres to build a grist and saw mill. The first settlers were from Litchfield, Connecticut.

Adams was incorporated in 1778, and named in honor of Samuel Adams, the revolutionary leader. Part of Adams was included in the new township of Cheshire, in 1793, and North Adams was set off as a separate township in 1878, since when it has outstripped the mother township in size and commercial importance.

In 1836 manufacturing made its appearance, taking advantage of the splendid water power afforded by the

Hoosac River, and since that time has played a dominant part in the development of the town.

In 1847 the Pittsfield and North Adams Rail Road, which ran thru the town, was completed.

The township is in the extreme north of Berkshire county, northwestern Massachusetts, having an area of twenty three square miles. It includes a portion of the valley of the Hoosac River, extending to the Hoosac Range on the east, and on the west to Mt. Williams and Greylock Mountain, elevations of 3040 and 3535 feet respectively. Greylock lies partly in Williamstown. The valley portion is level and contains several settlement centers, the largest of which, the object of this survey, bears the same name as the township, is a busy industrial town and is on a branch of the Boston and Albany Rail Road.

The climate is trying, showing great extremes of temperature (20degrees F. below zero to 100 degrees above). The mean average temperature is about 45. Altho the mean summer temperature over the state is about 70, in the elevated regions about Adams the springs and summers are often late and cold. The winters are decidedly severe. At Williamstown, near Adams, the winter mean is about 23. The yearly precipitation is about forty inches, and is evenly distributed thruout the year. In summer and autumn the weather is commonly fine and often most beautiful. Throughout the Berkshires a cool, pure, and elastic atmosphere prevails, relatively dry, and altogether delightful.

What is the meaning of elastic?

The country about Adams is, in general, rugged and mountainous. The Hoosac Hills (1200-1600 feet high), separating the valleys of the Housatonic and Connecticut, are a range of the Berkshires, a part of the Appalachian system, and a continuation of the Green Mountains of Vermont. With the Taconic Range on the west side of the Housatonic valley- of which the highest peaks are Greylock (also called Saddleback) and Mt. Williams- in the extreme northwest corner of the state, form the only considerable elevated land. Most of the seventy hills of the state having an elevation above 1500 feet are in this quarter. The country about Adams, like most of Massachusetts, is a part of the slanting upland that includes all of southern New England. This upland is an uplifted peneplain of subaerial denudation, (in some localities it is not easy to establish irrefutably and in detail the inter-arrangement of drainage and rock structure that proves it to be a subaerial peneplain rather than an uplifted submarine platform; but the general proof is very clear) now so far advanced in a second cycle of weathering and so thoroughly dissected that to an untrained eye it appears to be only a country of hills confusedly arranged. The general contour of the upland presents a remarkably even sky-line. In the nature and position of the upland rocks- mainly crystalline schists and gneisses, excessively complicated and disordered in mass, and also internally deformed-- there is abundant proof that the peneplain is a degraded mountain region. Greylock, a mile from Adams, is a monadnock of the original mountain system, a commanding summit-remnant of

resistant schist, and the highest point in the state. The upland is interrupted by rivers, the larger streams having cut their channels to very moderate gradients, but the smaller ones are steeper. The Housatonic river affords a beautiful example of the dependence of valley breadth upon the strike of soft or harder rock across the stream.

The glacial age has left abundant evidences on the topography and geology of the region. The ice covered even the Monadnocks. Till drumlins, morainic hills, eskers, kames, and river terraces afford the plainest evidences of the extent of the ice sheet.

The Berkshire country in general- Berkshire, Hampden, Hampshire, and Franklin counties- is among the most beautiful regions in the United States. It is a long, rolling highland, dominated by extensive, wooded hill-ridges, remarkably even-topped in general elevation, intersected and broken by deep valleys. The district is often called the Lake ~~Region~~ Region of America.

The Hoosatonic River, in portions placid, in others wild and rapid, winding along the deflecting barrier of the Hoosac Hills, is the most beautiful river in the state, despite the mercantile use of its water power.

The growth of population of the town has closely paralleled its industrial development. Its population in 1880 was 5591, in 1890 it was 9213, in 1900 it was 11,134, of whom 4376 were foreign born, in 1910 it was 13,026. Since that time there has been possibly a slight decrease. The earliest population was largely native, derived from

Litchfield, Connecticut. Soon afterwards there was an influx of Irish immigrants, followed later by English and French Canadians. In the last half of the nineteenth century Adams recieved a fair share of the general movement of Germans to this country. The last large addition to the population has been Polish. Adams shared very slightly in the immigration of Italians and southern Europeans to America.

Mr.P.P.Smith, local geneologist and historian, to whom I am indebted for most of the contained information concerning the population of Adams, makes the following classification of the present population:

Poles-	4000	floating.
German -	1000	"
French-	3000	"
Irish-	2000	stationary.
Native-	3000	" .

60% of the population are foreign born; as many are not permanent residents. There is a feeling among the natives that the Poles form the least desirable element of the town. There seems to be good ground for this opinion, as they Poles seem to have a distinctly un-American prejudice against amalgamating with the remainder of the population. They live in a more or less distinct and segregated district of the town, are heartily opposed to most plans for civic improvement, cling tenaciously to their mother tongue and teach it to their children to the exclusion of English, and maintain a standard of living inferior to the American standard. The religious

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difference (the Poles are almost always Roman Catholic) serves only to heighten the feeling against them, as the native population is largely Protestant.

The presence of such large blocks of foreign population resisting amalgamation is due to two factors largely:

- (1) The state of Massachusetts owes a large part of its dense population to immigration, and a relatively small part to the increase of native population. (For example, the increase in the last half of the nineteenth century was one third native and two thirds immigrant population.).
- (2) Adams is an industrial town, attracting large bodies of unskilled labor.

It is quite likely that the presence of a large foreign population, uncooperative, transient, and unfamiliar with American methods and ideals, have impeded to some extent public health work by the local authorities.

The township's principal industry is the manufacture of cotton goods, the value of which in 1905 (\$4,621,261) was 84.1% of the value of the township's total factory products. No other place in the United States showed so high a degree of specialization in this industry.

Adams is a "town" in the colloquial and technical sense peculiar to New England and has the usual form of government which goes with that political unit. As is common in settlements above a thousand, the settlement of Adams proper has a separate organization for street lighting, sidewalks, police, etc., and the officers of this organization include a prudential committee.

The Health Department.

The Board of Health consists of three members elected by the voters of the town at the same time that the other officers of the town are elected. Of the three members one is a physician and two are laymen. They are elected for a period of three years, one each year, so that no two of them pass out of office in the same year. The money paid the members is paid partly as a fixed salary, but is partly dependant on the actual work done. The physcian member, who is chairman, recieves about \$700 a year, while the lay members recieve about \$250. It has been the practice of the electors for a number of years to return the same men to the office .

The expenditures of the Board are made under the budget system; necessary expenses above the amount allowed in the budget are occasionally incurred, and are paid for by the town. The town allows at the present time \$8000 for the expenses of the Board, exclusive of salaries.

The Board maintains a Board of Health nurse, a school nurse, a tuberculosis dispensary, a dental clinic, an inspector of milk, an inspector of slaughtering and has within the last year taken up the work of immunizing school children against diphtheria by the toxin-antitoxin method. In addition to the work done by local men in the tuberculosis dispensary, the Board maintains a consultation service with a physcian having special training in the field. This service is used for doubtful or suspicious cases.

The diphtheria immunity testing was done with the active assistance of Dr. Leyland French of Pittsfield, Mass., district health officer. The service is being extended now to all children whose parents will give their consent to having the test carried out. Over five hundred have been tested, about half of which have been found immune. The number of susceptibles appearing for immunizing treatment has so far been disappointing.

The tuberculosis dispensary operates to lessen the number of sources of infection by isolation when possible, hygienic measures and sanatorium treatment for those infected. The number of cases appearing at the dispensary for examination is increasing yearly. Careful statistics and follow up work are maintained. When possible patients are sent to the state sanitarium; when this cannot be done the nurse visits them regularly in their homes. Examinations are made at the clinic twice a week. In 1922 Adams was rated as one of the three highest towns in the state in this work.

The Adams Dental Clinic is open twice each week during the year, except for two months, on Wednesday and Saturday mornings, from 9 to 12 o'clock; a total of 85 sessions. About ten children constitute the average attendance at these sessions. At some sessions as many as 30 present themselves; this is usually the case after teeth inspections in the schools and urgent extractions are necessary. Examinations of the childrens' teeth were conducted at

intervals in the public and parochial schools. In the schools the nurse teaches the children the necessity of the use of the tooth brush. A mouth hygiene exhibit was held in the high school. The individual examination reports show much work still to be done.

In general the Board seems to be functioning in a creditable manner, with adequate financial support. However, a pre-natal clinic seems to be an urgent necessity in a town with so large a proportion of illiterate and foreign population. The town maintains no diagnostic laboratory, but no doubt the state laboratories supply this need adequately.

Water.

Adams recieves its water supply from three sources, Dry Brook, Bassett Brook, and deep wells.

The deep wells are used only in the summer time and then only if the season is dry. The water from this source can be pumped directly into the water mains of the town or into the Bassett reservoir. The reason that this supply is used only as an auxillary unit is that it must be pumped to the mains while the reservoirs, being slightly higher than the level of the town, supply the pipes by gravity, unless there is an unusual demand (such as a conflagration) upon them, in which case the pressure is kept up by pumps. The water from the wells is pure, safe, and represents a desirable and satisfactory supply.

Bassett Brook approaches the town from the west, passing between the Pinnacle and Cole Mountain. Its water is collected in a reservoir and piped to the town. A pipe line connects it with the deep wells and water is sometimes pumped from the wells into it. The water shed of Bassett Brook is relatively small owing to the mountainous nature of the country thru which it flows. The banks are well timbered much of its course and the country is thinly settled. The water from this source is safe and as a water supply for the town it is satisfactory.

The largest amount of the water for the town is derived from Dry Brook, which approaches the town from the south thru Bellevue Cemetery. It winds through a fertile valley devoted to farming and is collected in a reservoir about a mile from

town. It is then piped to the town, flowing by gravity.

The Dry Brook pipe supplies a very small portion of the town before it joins the main line, as does also the Bassett Brook pipe, but the largest section of the town is supplied by water which is a mixture from the two sources.

A pumping station is maintained, consisting of duplicate steam and electric systems of pumping. Altho the reservoirs are at higher levels than the town, the pumping station is maintained for three reasons:

(1) Power is needed to raise the water from the wells to the water mains.

(2) The presence of large industrial plants in the town makes large conflagrations always possible. This is largely the reason for the duplicate system of pumping, i.e., as an extra insurance against the fire hazard.

(3) Shortage of water on the higher points of the town has been a very troublesome problem to the Prudential Committee. Morningside and Siggsville are particularly affected, and it is often late at night before any water whatever reaches the higher levels. This is a serious menace to health as well as a lack of protection to property. The reason for this shortage is that the higher houses on Morningside are only twenty or thirty feet lower than the Bassett reservoir overflow, and frictional loss in drawing water in large quantities thru pipes for a considerable distance reduces the pressure to such an extent that it does not reach the higher altitudes.

There is a natural limit of elevation beyond which it is not ~~fe~~ feasible to attempt to supply water by gravity power, and this level is lower than the level of the higher portions of the town.

The pumping station is not a complete solution to the problem, altho it affords some relief. Two reserve tanks were established on higher points in 1921, but they did not entirely eliminate the difficulty. The real trouble is that the main is not large enough to deliver the water needed to supply the wants of the district.

A real remedy is promised when a sixteen inch pipe, now under construction, from Bassett Reservoir to Maple Grove is completed. It will take the place of the twelve inch pipe which was inadequate.

The reservoirs of both Dry and Bassett Brooks are cleaned once a year.

Altho the water from the wells and from Bassett Brook is desirable and satisfactory as a water supply, they supply the smaller portion of the total used by the town. The most important supply is from Dry Brook.

The Dry Brook water supply is contaminated by pollution from farms along its water shed and is not safe for the town. Live stock is pastured in fields thru which the stream flows and the accumulated manure from barns is piled within a few rods of the stream. In one case a manure pile was found which was falling into the stream as it accumulated. The inevitable farm privy is scattered indiscriminately over the water shed in varying proximity to the stream and no control is exercised over the position or construction of these out houses. The inspector of milk, who exercises a certain control over the district thru the issuing of

permits to the dairies, is indifferent to this matter, altho quite efficient in his own particular work.

The state board of health is aware of the danger to the town from the Dry Brook supply, and has warned them of the danger. Yet there are people in a position to know, even members of the Prudential Committee, who are apparently unaware that the supply is unsafe.

If, however, the Dry Brook supply were safe, there would still be an objection to the water supply of the town. In a dry season it is inadequate. This inadequacy is a menace to ~~the~~ health and to the safety of property.

There are two possible escapes from the problem of inadequacy.

One of these is the installation of meters for the sale of water. The non-restricted use of water now given to all but the largest (industrial) consumers, together with a low rate, encourages waste, because the consumer does not have to pay for his carelessness. Many consumers let their water run continuously in the winter to keep it from freezing and in the summer to keep it cooler. Sprinkling rules are not observed and leaky faucets and closets are common. The consumption of water in Adams has averaged as high as 150 gallons per person per day, where the normal use should be 90 gallons. Other estimates are that "universal metering would undoubtedly make a fifty per cent cut in your use, and probably render it unnecessary to consider additional supply for a long time." Metering the water of consumers would not only conserve the supply, but would save pumping costs and

apportion the cost more accurately and justly. The chief objection to this plan is the expense; it would cost \$40,000 to buy and install the meters and an additional \$3,000 a year to maintain them in operation.

The other possibility in increasing the water supply is to open up some new source. New wells could be sunk, but the water shed of the Cole Mountain district is so limited that it is doubtful whether it is advisable to sink any more wells there. Harmony Brook on the west or Tophet Brook on the east could be used, but the water sheds of these streams is such that if they were used the necessity of chlorinating the entire supply should be seriously considered.

The entire problem of an adequate water supply is made difficult by the further fact that the mountainous nature of the country gives a relatively small drainage area from which water is to be obtained for the town. It is, however, a problem which the town must face in the very near future.

Wells for private homes are very rare. By a fairly thorough inspection of the town and by close questioning of residents less than half a dozen were located. These are very little used and are negligible so far as furnishing any proportion of the town's water is concerned. The industrial plants, however, do maintain large independent water supplies, some from wells and some from ponds. These systems are used for fire protection, certain industrial processes

requiring large amounts of water, and for washing purposes for the men.

These large supplies of mill water independent of the town supply carry with them often a double menace from typhoid.

The mill supply is usually separated from the town supply by a check valve which operates in one direction, i.e., it allows town water to enter but, when in perfect order, does not allow mill water to pass into the mains of the town. In case of a fire the mill pumps are capable of working up a pressure of 120 pounds in the mill pipes, while the pressure in the town pipes is rarely 100. If the check valve is neglected and allowed to become dirty and rusty it does not seat properly, so that what actually happens when the mill pressure exceeds the town pressure is that the mill is pumping its water, which is often impure, directly into the city pipes and it is used for drinking purposes.

The mill water is fauceted for use by the workmen as washing water. It is not supposed to be used for drinking and this is so stated in a sign above each faucet. As many of the workmen do not speak English and still more do not read it, these signs are unintelligible to many, and these men drink from the faucets containing mill water. A number of cases of typhoid fever were traced to this source last summer.



Bassett Brook,
in the Berkshire Hills,
Adams, Mass.

This water supply is safe.



Dry Brook Bridge, Adams, Mass.

This water supply is unsafe.



Dry Brook.



Dry Brook. The state Board of Health considers this water supply unsafe.



Dry Brook water shed. The manure pile in the foreground is within thirty yards of the stream. This farm is a dairy supplying milk to Adams.



Dry Brook water shed. This stream, in contrast to Bassett Brook, passes thru a relatively thickly settled farming district where the danger of pollution is a real menace.



Dry Brook Reservoir. Water flows by gravity from this reservoir to the faucets.



A barn on the Dry Brook water shed. Dry Brook passes thru the same field, which is used as a pasture for live stock.



Typical timbered land surrounding Bassett Brook Reservoir.



Dry Brook Reservoir.

Water analysis averages.

	Color.	Residue.	Free Ammonia	Albuminoid total	Chlor. suspend.	Hardness
Dry Brook	.24	6.99	.0014	.0072	.0011	.12 4.4
Bassett Brook	.01	3.89	.0014	.0038	.0006	.12 2.5
Tubular wells	.00	13.80	.0000	.0008		.17 13.6

In the tubular wells the iron was .009, the nitrates .0330 and nitrites .0000

The greater amount of color, residue, and albuminoids in Dry Brook gives but slight indication of the essential difference between this stream and Bassett Brook as sources of water for Adams. The dangerous nature of Dry Brook is fully revealed only by a survey of its water shed.

Sewage.

The town of Adams extends approximately 4.5 miles north and south and 1.5 miles east and west. The Hoosac River which flows thru the center of the town is bordered on either side by a comparatively narrow strip of fairly level land, back of which slopes are steep, rising to the mountains on either side of the river. The thickly populated section of the town is within this narrow strip in the vicinity of the river, and the topography is such that it is likely that the dense population will remain here. The river falls ~~re~~ rapidly thru the town. There are numerous factories situated on or near the river with waste material to be taken care of.

In 1908 the local Board of Health asked for and recieved an appropriation for a survey for a permanent sewerage system. At that time there already existed many short ^Wserers which had been constructed from time to time. These sewers were not constructed with a view to making them part of a general system of any permanence, but were built with the idea of serving only one small district. They were built without manholes and in many cases ^{ei}recieve ground water and surface water. These old sewers in all cases discharge individually into the Hoosac River or into tributary streams at the most convenient points, and in many cases close to or within densely populated areas as to create an offensive condition in the vicinity. In some cases the brooks into which the sewers empty do not flow during the summer months so that the streams become open sewers flowing thru a densely

populated district. Even when the sewage reached the river promptly the quantity of it was sufficient to create a nuisance in the village.

It was to eliminate these conditions that, at the instance of the State Board of Health, a permanent sewage system was designed in 1908. Altho this system is still far from complete, it is designed with the idea of collecting all the sewage in a trunk sewer and conveying it to some point below the thickly settled portion of the town, where it might be discharged into the river thru a properly located outlet without creating a local nuisance.

The main sewer, as planned, starts at the factory of the Spool and Bobbitt Company, in the southerly part of the town, not far from the Cheshire line, and follows Grove Street to the bridge over the railroad. Here it will leave the present highway and follow the line of the old highway across the river, being laid beneath the bed of the river, and entering the highway again just below the river crossing; thence it will follow Grove Street to a point opposite the Renfrew Manufacturing Company, just south of the bridge over the river, where it will leave the highway and follow the right bank of the river for a short distance, and thence along the bed of the stream to a point near the dam of the Plunkett Mill. Here it will leave the river and follow the left bank of the stream into the yard of the Plunkett Mill, thence, crossing beneath the bed of the stream, into Glenn Street,

and thence to Commercial Street.

The departure from the highway, from the Renfrew Mill to the Plunkett Mill, is made necessary by the rise in Commercial Street in the vicinity of Pearl Street, and where laid in the bed of the river, the sewer will be constructed of cast iron pipe.

From Glenn Street the main sewer will follow Commercial Street to Dean Street, passing beneath the river just above the Brown Paper Mill; thence along Dean Street, where it will again cross the river; thence along Spring Street and Gaven Avenue to Bedell Lane, where it will pass beneath the bed of the river to Winter Street. The sewer will then follow along the easterly side of the river thru Winter, Hoosac, Mill, Murray and Crotteau Streets to Cook Street, where it will cross the river to Columbia Street, follow Columbia Street to Friend Street, where, on account of the rise in the grade of Columbia Street, it will be necessary to pass thru private property between Columbia Street and the railroad, across Line Street to a point about 600 feet north of Lime Street where the temporary outlet to the river will begin. The temporary outlet will cross private property for a distance of 400 feet to a point below the gates of the Berkshire Hills Paper Company. Since it is certain that this outlet can only be temporary (for reasons to be explained below), and must be abandoned when the quantity of sewage becomes considerably greater than it is now, the capacity of this sewer can be made smaller than the main line, so it will be an 18 inch pipe while the main line sewer will be 24 inches. The permanent line of the main sewer will

continue across private property near the Berkshire Hills Paper Company's Pond to a point on Howland Avenue ~~on Brown Avenue~~ near Brown Avenue, from which point the sewer will be laid in Howland Avenue to a street leading to the Zionite Station, where it will cross the railroad track to the proposed location of the purification works.

The only principal branch sewers are those at River Street collecting sewage from the district in the vicinity of Elm Street and the railroad, and at Hoosac Street, where one sewer entering from the west will collect the sewage from the Maple Street district, and another from the east will collect it from the North Summer Street district.

Until such time as the city of North Adams, five miles down the stream, removes all of its sewage and manufacturing wastes from the river the State Board of Health will permit Adams to empty all its sewage and mill wastes into the river without treatment, provided they are concentrated into one outlet north of the thickly populated section of the town as specified in the above plan. It is obvious that it would not be reasonable for the town of Adams to purify its sewage at considerable expense before discharging it into the river until steps are taken to remove the much more serious pollution that occurs at North Adams; the Hoosac River flows thru the center of North Adams, and in its course thru that city is a highly polluted stream.

When the quantity of sewage from Adams becomes great enough to contaminate the river to the North Adams line, or whenever North Adams acts on the recommendation of the State Board of Health and installs a purification plant

for its own sewage, the State Board of Health will require the town of Adams to purify its sewage before emptying it into the Hoosac.

Anticipating the time when it becomes necessary to keep the sewage out of the river, the present plan includes a proposed purification plant. (With the same idea in view the sewers are being so constructed as to minimize the quantity of sewage by the elimination of ground water.) The plan calls for purification by the system of intermittant sand filtration. The purification works, as designed, consist of a settling tank having a capacity of 310,000 gallons, twenty-eight sand filters having a combined area of 21.7 acres, and six sludge beds having a combined area of 1.5 acres.

Since 1908 every new sewer constructed has been as a part of this general system. In spite of this, however, progress has been slow and very few outlets into the river have been eliminated. The river thru the densely settled portion of the town is not only highly polluted, but some of its tributary streams, as has been mentioned, are nothing better than open sewers in the dry months of the year. One sewer simply discharges into a vacant lot. So that, although plans for the future insure an adequate and good sewerage system, the present system is very bad, both offensive to the nose and dangerous to health.

The accompanying map of Adams has marked on it the ~~present~~ present and the proposed sewage systems. It shows at a glance the important links of the trunk line sewer which are still incomplete.

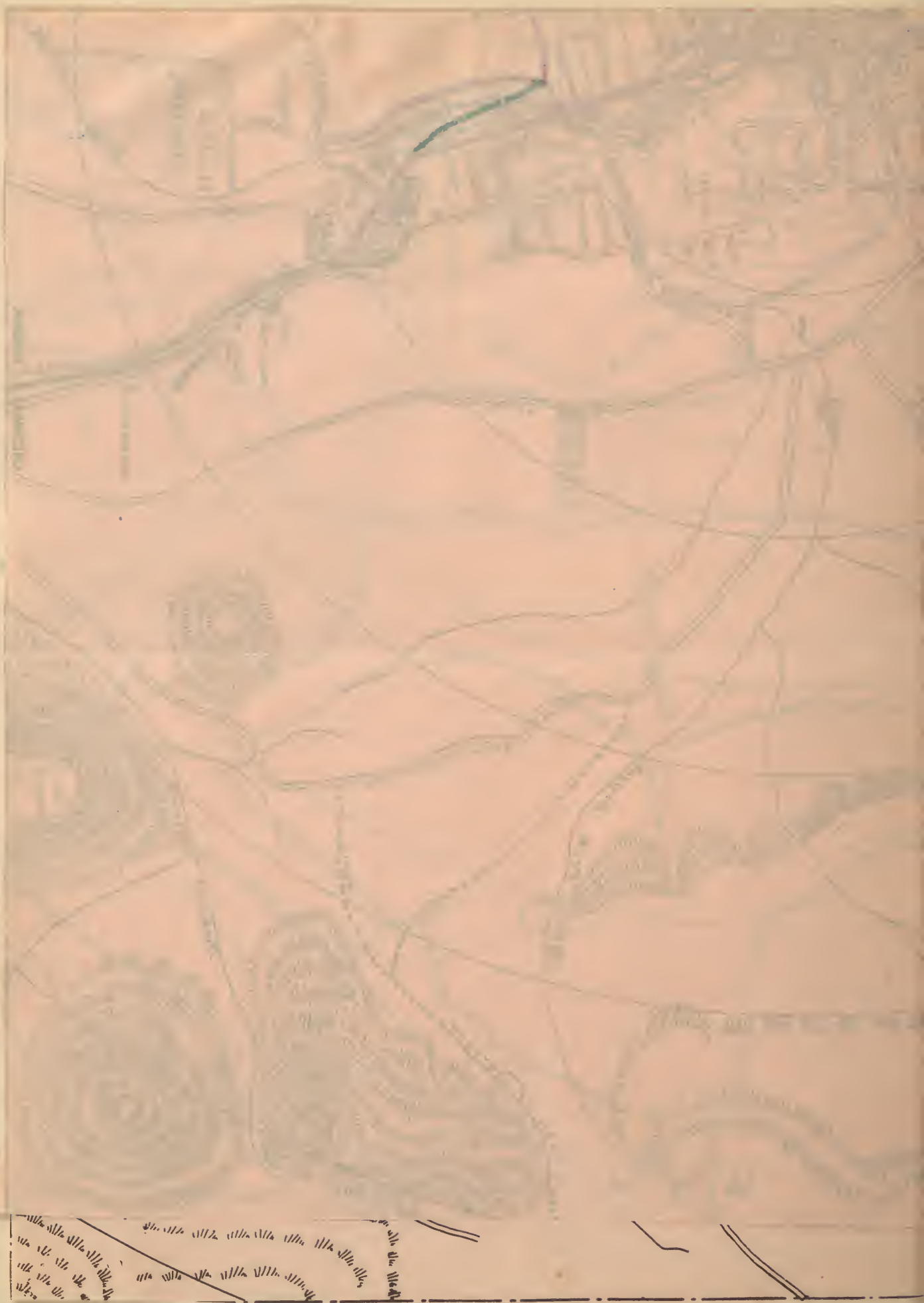


Present Sewage Mains —
Proposed Sewage Mains —

MAP OF
ADAMS

BOWEN'S
CORNER'S

HOOSAC RANGE



WOOD BROS.

DEALERS IN

PIANOS

Victor Victrolas

And a Complete
Library of Records

MUSICAL MERCHANDISE

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MUSIC BOOKS**

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in Every Department

PIANO TUNING AND REGULATING
DONE BY COMPETENT WORKMEN

WOOD BROS.

Pittsfield, Mass. North Adams, Mass.



Hoosac River on its way thru Adams. This is the last link in the sewage system of the town.



Bank of the Hoosac River at Hoosac Street. One sewer outlet discharges into the river at this point.



Hoosac River as it flows thru Adams. The sewage of the town is discharged into this stream at irregular and convenient intervals along its bank.



Rear view of the Berkshire Mills tenements, on the bank of the Hoosac. Sewage and garbage from this tenement goes into the river.

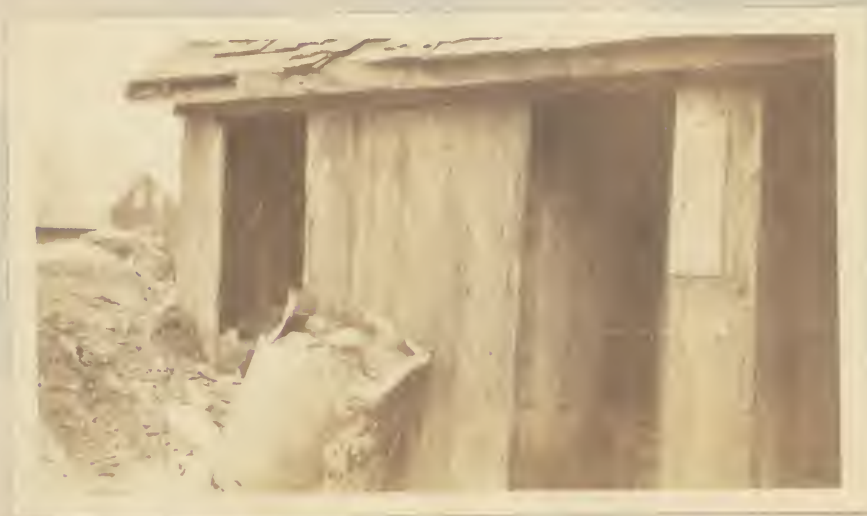
Garbage, Refuse, Ashes.

For the most part the garbage of the town is collected by the town farm, where it is fed to hogs. This collection is made daily, so that the system for the disposal of garbage is quite ideal. A little of it, however, goes directly into the river from houses along the bank.

Refuse and ashes are allowed to accumulate in the back lots and alleys of the town and no attempt is made by the town to remove them. Once a year, however, a "clean up week" is held when this accumulation is all hauled away. The Board of Health sees that this is done by an inspection at the end of the week. While this system leaves much to be desired it is no better nor worse than that in most small towns. It tends to form unsightly nooks and corners about the town, a few of which are shown in accompanying photographs.



A front yard in the residential section.



Delapidated privies and accumulated refuse near R.R. station.



Typical accumulation of refuse and ashes.



A.

B.

C.

Accumulations of refuse and ashes about the back yards of the town. All of these scenes are in the heart of the town. "A" is taken behind one of the larger meat markets. "C" is taken just off the main street of the town. "B" has an innocent and orderly enough appearance, but the in one of the boxes was a dead cat and a quantity of decayed meat.

Vital Statistics.

The death rates for the reportable diseases for Adams is 189 as compared to the state death rate for the same diseases of 195.

The infant mortality for Adams for the preceeding fiscal year was 272 per 100,000. There are no state figures for the same period.

During July, August, September and October 23 cases of typhoid were reported from Adams. This continued high incidence led to an investigation, which revealed nothing of interest but a common place of work among the patients. Examination of the water supply of that particular mill showed that polluted river water was pumped thru the mill mains about once a week. The State Board of Health took steps to put an end to this.

The case rate for diphtheria (see next page) is markedly higher than that of the state. The fact that the local board is cooperating with the state authorities to Schick test all school children will undoubtedly result in a marked diminution of this disease.

The rate for scarlet fever is also high. There were, however, no deaths.

The incidence of pulmonary tuberculosis is high in a state which has a high incidence. The cases are largely among mill workers, due possibly in part to conditions of work (high temperatures and dust laden atmosphere), and partly to the known predilection of this disease for the poorer classes, where the homes are crowded.

Steidl

Adams Mass.

Challenge and
receive in
adequate ada

Pop - not given from off census

22 - DR for reportable diseases - not standard -

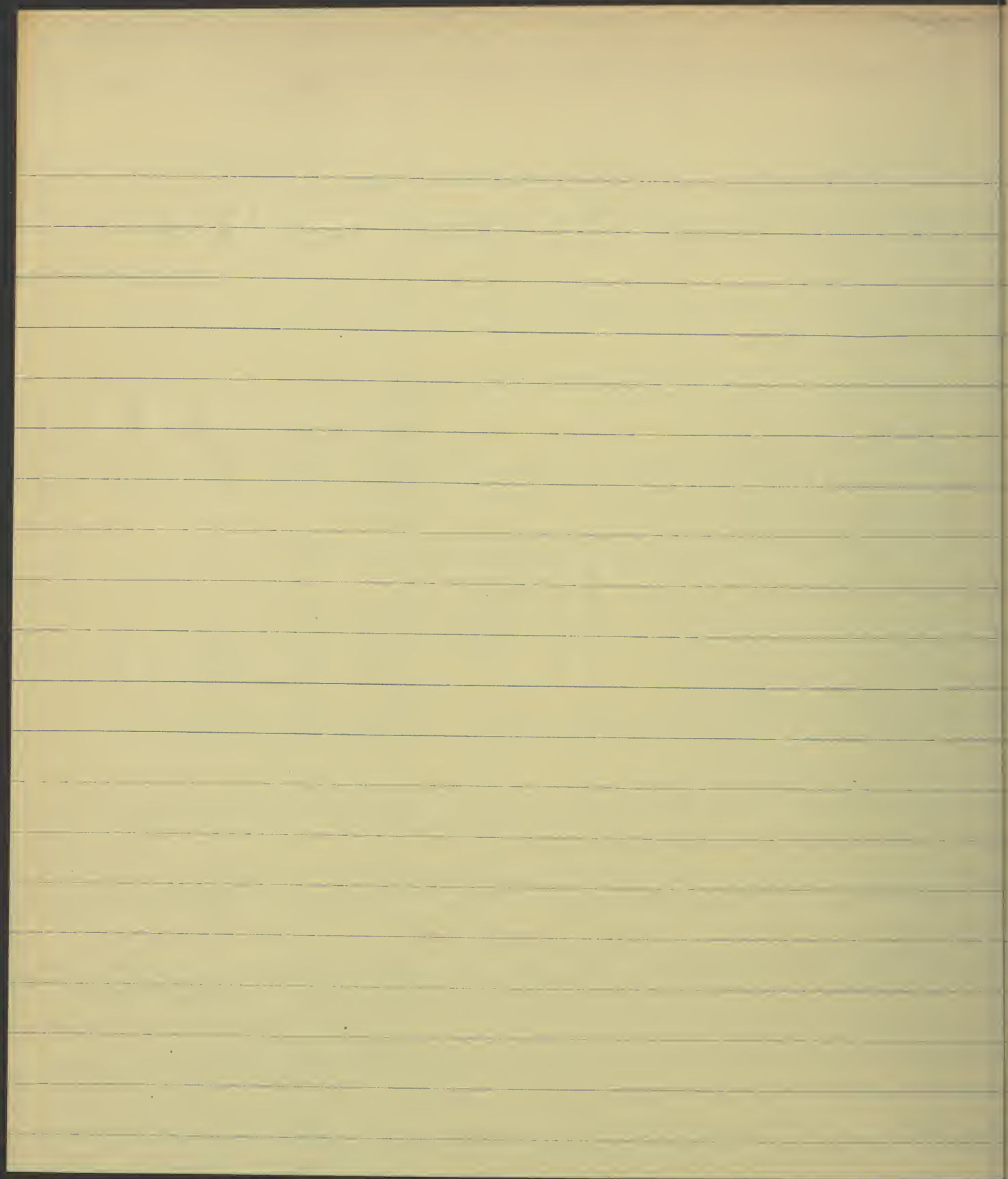
Im - 272 per 100 000 - No State
figures -

Schick testing recd. KL

Pg - 23 Town pop - + State pop not stated
for chick -
12,200

Discussion of CD's inadeq.

51 - Summary - Not in order of imp.



Cases and Deaths from Diseases Dangerous
to Public Health.

	Town			State		
	No. of cases.	Case rate.	Death rate.	No. of cases.	Case rate.	Death rate.
Diphtheria	57	470	16.5	9100	233.2	15.5
Scarlet Fever	55	457	0.0	8331	213.5	4.8
Chicken Pox	7	58	0.0	8324	213.3	.2
Dysentery	1	8.2	0.0	25	.6	.6
Cerebro-spinal meningitis	1	8.2	0.0	164	4.2	1.5
Influenza	7	58	8.2	735	18.8	4
Lobar Pneumonia	5	36	36	4080	104.5	46.6
Tuberculosis	36	297	36	6168	158	84.7
Typhoid Fever	14	116	8.2	917	23.5	3.1
Whooping Cough	26	214	8.2	5703	146.1	5.0
Measels	1	8.2	0.0	17827	456.8	4.4

OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS

The Commonwealth of Massachusetts

MEDICAL EXAMINER'S CERTIFICATE OF DEATH

(City or Town)

1 PLACE OF DEATH

(ISSUED UNDER THE PROVISIONS OF REVISED LAWS, CHAPTERS 24 AND 29)

County

State

Registered No.

Registered No.

(Place of death)

(Place of residence)

City or Town

No.

St.

Ward

(If death occurred in a hospital or institution, give its NAME instead of street and number)

2 FULL NAME

(If in the Army or Navy of the United States, give rank, organization, etc.)

(a) Residence. No.

(Usual place of abode)

St.

Ward.

(If non-resident give city or town and State)

Length of residence in city or town where death occurred

years

months

days

How long in U. S., if of foreign birth?

years

months

days

PERSONAL AND STATISTICAL PARTICULARS

3 SEX

4 COLOR OR RACE

5 SINGLE, MARRIED, WIDOWED OR
DIVORCED (write the word)5a If married, widowed, or divorced
HUSBAND of
(or) WIFE of

6 DATE OF BIRTH

(Month)

(Day)

(Year)

7 AGE

Years

Months

Days

If LESS than
1 day,..... hrs.
or..... min.

If STILLBORN, enter that fact here

8 OCCUPATION OF DECEASED

(a) Trade, profession, or
particular kind of work

(b) Name of employer

9 BIRTHPLACE (city or town)
(State or country)

10 NAME OF FATHER

11 BIRTHPLACE OF FATHER (city or town)
(State or country)

12 MAIDEN NAME OF MOTHER

13 BIRTHPLACE OF MOTHER (city or town)
(State or country)

14

Informant
(Address)

15

Filed, 19

Registrar of city or town where death occurred

Filed, 19

Registrar of city or town where deceased resided

MEDICAL CERTIFICATE OF DEATH

16 DATE OF DEATH

(Month)

(Day)

(Year)

17

I HEREBY CERTIFY that I have investigated the death
of the person above-named and that the CAUSE AND MANNER thereof
are as follows:

(See reverse side for additional space)

18 Where was injury sustained
if not at place of death?

(Signed)....., M.D.

(Address).....

Medical Examiner for.....

Date.....

(Month)

(Day)

(Year)

19 PLACE OF BURIAL, CREMATION, OR REMOVAL

DATE OF BURIAL

(Month) (Day) (Year)

20 UNDERTAKER

ADDRESS

21 Burial permit
issued by.....Official
position22 Date of
issue.....

MARGIN RESERVED FOR BINDING

N. B.—WRITE PLAINLY, WITH UNFADING BLACK INK—THIS IS A PERMANENT RECORD. Every item of information should be carefully supplied. Age should be stated EXACTLY. MEDICAL EXAMINERS should state CAUSE OF DEATH in plain terms, so that it may be properly classified. Exact statement of OCCUPATION is very important. See reverse side for extracts from the laws of the Commonwealth and instructions.

EXTRACTS
FROM THE LAWS OF THE
COMMONWEALTH OF MASSACHUSETTS
GOVERNING THE
RETURN OF CERTIFICATES OF DEATH

A physician shall forthwith, after the death of a person whom he has attended during his last illness, at the request of an undertaker or other authorized person or of any member of the family of the deceased, furnish for registration a standard certificate of death, stating to the best of his knowledge and belief the name of the deceased, his supposed age, the disease of which he died [defined so that it can be classified under the international classification of causes of death], where contracted, the duration of his last illness, when last seen alive by the physician, and the date of his death. . . . — *Revised Laws, Chap. 29, Secs. 10 and 1, as amended by Acts of 1910, Chap. 322.*

No undertaker or other person shall bury a human body . . . until he has received a permit from the board of health or its agent, . . . or . . . from the clerk of the city or town in which the person died; . . . no such permit shall be issued until there shall have been delivered to such board, agent or clerk, . . . a satisfactory written statement containing the facts required by law to be returned and recorded, which . . . shall be accompanied by a satisfactory certificate of the attending physician, if any, as required by law, or in lieu thereof a certificate as hereinafter provided. If there is no attending physician, or if, for sufficient reasons, his certificate cannot be obtained early enough for the purpose, or is insufficient, the chairman of the board of health, if a physician, or any physician employed by said board or by the selectmen for the purpose, shall upon application make such certificate as is required of the attending physician. If death is caused by violence, the medical examiner only shall make such certificate. . . . The person to whom the permit is so given and the physician who certifies to the cause of death shall thereafter furnish for registration any other necessary information which can be obtained as to the deceased, or as to the manner or cause of the death, which the clerk or registrar may require. — *Revised Laws, Chap. 78, Sec. 33.*

Medical examiners shall, in all cases, certify to the city or town clerk or to the city registrar in the place where the deceased died, his name and residence, if known otherwise

DESCRIPTION (for unknown person)

a description of such person as full as may be, with the cause and manner of his death, and shall make examination upon the view of the dead bodies of only such persons as are supposed to have come to their death by violence. — *Revised Laws, Chap. 24, Sec. 8.*

RULES OF PRACTICE

The fulfilment of the purpose of these laws calls for the observance of the following rules of practice:

(1) Attending physicians will certify to such deaths only as those of persons to whom they have given bedside care during a last illness from disease unrelated to any form of injury.

(2) Board of Health physicians will certify to such deaths only as those of persons who, though disabled by recognized disease unrelated to any form of injury, have died without recent medical attendance or whose physician is absent from home when the certificate of death is needed.

(3) Medical Examiners will investigate and certify to all deaths supposably due to injury. These include not only deaths caused directly or indirectly by traumatism (including resulting septicemia), and by the action of chemical (drugs or poisons), thermal, or electrical agents, and deaths following abortion, but also deaths from disease resulting from injury or infection related to occupation, the sudden deaths of persons not disabled by recognized disease, and those of persons found dead.

COPIES OF RECORDS OF DEATHS OF
NON-RESIDENT DECEDENTS

The clerk of each city and town shall forthwith make certified copies of the records of all . . . deaths recorded during the previous month, if the . . . deceased [was a resident] of any other city or town in this commonwealth or in any other state at the time of said . . . death, and transmit them to the clerk of the city or town of which such . . . deceased person [was] resident at the time of the said . . . death . . . and the clerk of a city or town in this commonwealth so receiving such certified copies, or certified copies of . . . deaths, from the clerk of a city or town without the commonwealth, shall record the same. — *Revised Laws, Chap. 29, Sec. 13, as amended by Acts of 1910, Chap. 93, Sec. 3.*

The Commonwealth of Massachusetts

OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS

STANDARD CERTIFICATE OF DEATH

1 PLACE OF DEATH

County

Berkshire

State

Massachusetts

Registered No.

(City or town)

City or Town

Adams

No. 145

Line

St.

2nd

Ward

(If death occurred in a hospital or institution, give its NAME instead of street and number)

2 FULL NAME

Anthony Sikas

(If in the Army or Navy of the United States, give rank, organization, etc.)

(a) Residence. No.

1450

Line

St.

2nd

Ward.

(Usual place of abode)

(If non-resident give city or town and State)

Length of residence in city or town where death occurred

5

years

2

months

10

days

How long in U. S., if of foreign birth?

12

years

1

months

3

days

PERSONAL AND STATISTICAL PARTICULARS

3 SEX

Male

4 COLOR OR RACE

White

5 SINGLE, MARRIED, WIDOWED, OR
DIVORCED (write the word)

Single

5a If married, widowed, or divorced
HUSBAND of
(or) WIFE of

6 AGE

Years

Months

Days

If LESS than

1 day.....hrs.

or.....min.

42

5

17

If STILLBORN, enter that fact here

7 OCCUPATION OF DECEASED

(a) Trade, profession, or
particular kind of work

Mill worker

(b) Name of employer

Hempden Manufacturing Co.

8 BIRTHPLACE (City)

(State or country)

Poland

9 NAME OF
FATHER

Michael Sikas

10 BIRTHPLACE OF
FATHER (City)

(State or country)

Poland

11 MAIDEN NAME
OF MOTHER

Marie Pucci

12 BIRTHPLACE OF
MOTHER (City)

(State or country)

Italy

13

Informant

(Address)

14

Filed

(Month) (Day) (Year)

REGISTRAR

20

I HEREBY CERTIFY that a satisfactory stan-
dard certificate of death was filed with me
BEFORE the burial or transit permit was issued

MEDICAL CERTIFICATE OF DEATH

15 DATE OF DEATH

April 9th 1922

(Month)

(Day)

(Year)

16

I HEREBY CERTIFY, That I attended deceased from

April 4th, 1922, to April 9th, 1922that I last saw him alive on April 9th, 1922

and that death occurred, on the date stated above, at 2 p.m.

The CAUSE OF DEATH was as follows:

Lobar pneumonia

(duration) yrs. mos. 5 ds.

CONTRIBUTORY

(SECONDARY)

(duration) yrs. mos. ds.

17 Where was disease contracted
if not at place of death?

Did an operation precede death? no Date of

Was there an autopsy? no

What test confirmed diagnosis? sputum examination

(Signed) , M.D.

(Address)

Date

(Month)

(Day)

(Year)

18 PLACE OF BURIAL, CREMATION, OR REMOVAL

Bellevue
(Cemetery)Adams
(City or town)

DATE OF BURIAL

April 12th 1922

19 UNDERTAKER

Anthony Klammer

ADDRESS

Adams

Official
positionDate of
issue
of permitPermit
No.

MARGIN RESERVED FOR BINDING

N.B.—WRITE PLAINLY, WITH UNFADING BLACK INK—THIS IS A PERMANENT RECORD. Every item of information should be carefully supplied. AGE should be stated EXACTLY. PHYSICIANS should state CAUSE OF DEATH in plain terms, so that it may be properly classified. Exact statement of OCCUPATION is very important. See instructions and extracts from the laws on back of certificate.

Statement of occupation.—Precise statement of occupation is very important, so that the relative healthfulness of various pursuits can be known. The question applies to each and every person, irrespective of age. For many occupations a single word or term on the first line will be sufficient, e. g., *Farmer or Planter, Physician, Composer, Architect, Locomotive engineer, Civil engineer, Stationary fireman, etc.* But in many cases, especially in industrial employments, it is necessary to know (a) the kind of work and also (b) the nature of the business or industry, and therefore an additional line is provided for the latter statement; it should be used only when needed. As examples: (a) *Spinner, (b) Cotton mill; (a) Salesman, (b) Grocery; (a) Foreman, (b) Automobile factory.* The material worked on may form part of the second statement. Never return "Laborer," "Foreman," "Manager," "Deputy," etc., without more precise specification, as *Day laborer, Farm laborer, Laborer—Coal mine, etc.* Women at home, who are engaged in the duties of the household only (not paid Housekeepers who receive a definite salary), may be entered as *Housewife, Housework, or At home* and children, not gainfully employed, as *At school or At home.* Care should be taken to report specifically the occupations of persons engaged in domestic service for wages, as *Servant, Cook, Housemaid, etc.* If the occupation has been changed or given up on account of the disease causing DEATH, state occupation at beginning of illness. If retired from business, that fact may be indicated thus: *Farmer (retired, 6 yrs.)*. For persons who have no occupation whatever, write *None*.

Statement of cause of death.—Name, first, the disease CAUSING DEATH (the primary affection with respect to time and causation), using always the same accepted term for the same disease. Examples: *Cerebrospinal fever* (the only definite synonym is "Epidemic cerebrospinal meningitis"); *Diphtheria* (avoid use of "Croup"); *Typhoid fever* (never report "Typhoid pneumonia"); *Lobar pneumonia; Bronchopneumonia* ("Pneumonia," unqualified, is indefinite); *Tuberculosis of lungs, meningitis, peritonium, etc.*; *Carcinoma, Sarcoma, etc., of* (name origin); "Cancer" is less definite; avoid use of "Tumor" for malignant neoplasms); *Menses; Whooping cough; Chronic valvular heart disease; Chronic interstitial nephritis, etc.* The contributory (secondary or intercurrent) affection need not be stated unless important. Example: *Menses* (disease causing death), *29 ds.; Bronchopneumonia* (secondary), *10 ds.* Never report mere symptoms or terminal conditions, such as "Asphemia," "Anemia" (merely symptomatic), "Atrophy," "Collapse," "Coma," "Convulsions," "Idebility," "Congenital," "Senile," etc.), "Dropsy," "Exhaustion," "Heart failure," "Hemorrhage," "Intoxication," "Marasmus," "Old age," "Shock," "Uremia," "Weakness," etc., when a definite disease can be ascertained as the cause. Always qualify all diseases resulting from childbirth or miscarriage, as "Puerperal septicemia," "Puerperal peritonitis," etc.

State cause for which surgical operation was undertaken.
(Recommendations on statement of cause of death approved by Committee on Nomenclature of the American Medical Association.)

Bronchopneumonia: If primary cause, write the word "primary"; if secondary, give primary cause.

Certificates will be returned for additional information which give any of the following diseases, without explanation, as the sole cause of death: Abortion, cellulitis, childbirth, convulsions, hemorrhage, gangrene, gastritis, erysipelas, meningitis, miscarriage, necrosis, peritonitis, phlebitis, pyemia, septicemia, tetanus.

A physician or registered hospital medical officer shall forthwith, after the death of a person whom he has attended during his last illness, at the request of an undertaker or other authorized person or of any member of the family of the deceased, furnish for registration a standard certificate of death, stating to the best of his knowledge and belief the name of the deceased, his supposed age, the disease of which he died, defined as required by section one, where same was contracted, the duration of his last illness, when last seen alive by the physician or officer and the date of his death. . . . — *Gen. Laws, Chap. 46, Sec. 9.*

No undertaker or other person shall bury a human body . . . until he has received a permit from the board of health or his agent . . . or . . . from the clerk of the town where the person died; . . . No such permit shall be issued until there shall have been delivered to such board, agent or clerk . . . a satisfactory written statement containing the facts required by law to be returned and recorded, which shall be accompanied, in case of an original instrument, by a satisfactory certificate of the attending physician, if any, as required by law, or in lieu thereof a certificate as hereinafter provided. If there is no attending physician, or if, for sufficient reasons, his certificate cannot be obtained early enough for the purpose, or is insufficient, a physician who is a member of the board of health, or employed by it or by the selectmen for the purpose, shall upon application make the certificate required of the attending physician. If death is caused by violence, the medical examiner shall make such certificate. . . . The person to whom the permit is so given and the physician certifying the cause of death shall therefor furnish for registration any other necessary information which can be obtained as to the deceased, or as to the manner or cause of the death, which the clerk or registrar may require. — *Gen. Laws, Chap. 114, Sec. 46.*

Medical examiners shall make examination upon the view of the dead bodies of only such persons as are supposed to have died by violence. — *Gen. Laws, Chap. 38, Sec. 6.*

. . . He shall in all cases certify to the town clerk or registrar in the place where the deceased died his name and residence, if known; otherwise a description as full as may be, with the cause and manner of death. — *Gen. Laws, Chap. 38, Sec. 7.*

RULES OF PRACTICE

The fulfilment of the purpose of these laws calls for the observance of the following rules of practice:

(1) **Attending physicians** will certify to such deaths only as those of persons to whom they have given bedside care during a last illness from disease unrelated to any form of injury.

(2) **Board of Health Physicians** will certify to such deaths only as those of persons who, though disabled by recognized disease unrelated to any form of injury, have died without recent medical attendance or whose physician is absent from home when the certificate of death is needed.

(3) **Medical examiners** will investigate and certify to all deaths supposedly due to injury. These include not only deaths caused directly or indirectly by traumatism (including resulting septicemia), and by the action of chemical (drugs or poisons), thermal, or electrical agents, and deaths following abortion, but also deaths from disease resulting from injury or infection related to occupation, the sudden deaths of persons not disabled by recognized disease, and those of persons found dead.

MARGIN RESERVED FOR BINDING

WRITE PLAINLY, WITH UNFADING BLACK INK - THIS IS A PERMANENT RECORD

N.B. - In case of more than one child at a birth, a SEPARATE RETURN must be made for each, and the number of each, in order of birth, stated

10-18, 10,000.

1 PLACE OF BIRTH

The Commonwealth of Massachusetts
OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS

County of

CANVASSER'S RETURN OF A BIRTH

(To be used for making returns of births, obtained by canvasser and *not* previously recorded)

City or
Town of

Registered No.

No., St. Ward
(If birth occurred in a hospital or institution, give its NAME instead of street and number)

2 FULL NAME OF CHILD
(If child is not yet named, make supplemental report, as directed)

3 Sex of Child	4 Twin, triplet, or other ? (To be answered only in event of plural births)	4a Number in order of birth	5 Born alive or still-born	6 Date of birth (Month) (Day) (Year)
7 FATHER FULL NAME			8 MOTHER FULL MAIDEN NAME	
9 RESIDENCE No. St. (At time the birth occurred) (City or town)			10 RESIDENCE No. St. (At time the birth occurred) (City or town)	
11 COLOR	12 AGE AT LAST BIRTHDAY YEARS (At time the birth occurred)		13 COLOR	14 AGE AT LAST BIRTHDAY YEARS (At time the birth occurred)
15 BIRTHPLACE (City or town) (State or country)			16 BIRTHPLACE (City or town) (State or country)	
17 OCCUPATION (At time the birth occurred)			18 OCCUPATION (At time the birth occurred)	
19 Attendant at birth Physician or midwife Address No. St. City or town Did above-named personally attend the birth? (Yes or No)			20 Informant Address No. St. City or town of Relationship to child, if any	
21 Name of canvasser			22 Filed (Month) (Day) (Year)	
Date return was obtained (Month) (Day) (Year)			REGISTRAR	





MARGIN RESERVED FOR BINDING
WRITE PLAINLY, WITH UNFADING BLACK INK - THIS IS A PERMANENT RECORD
NO RETURN WITH ERASURES OR ALTERATIONS WILL BE ACCEPTED

4-22. 50,000.

1 PLACE OF BIRTH

County of Berkshire

City or Town of Adams

The Commonwealth of Massachusetts
OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS

Adams
(City or town)

2 FULL NAME OF CHILD Amelita Stanislaus

3 Sex of Child Female

4 Twin, triplet or other? No

5 Born alive or stillborn Yes

6 Date of birth April 5th 1922

7 FULL NAME FATHER John Stanislaus

8 PRESENT NAME AND MAIDEN NAME MOTHER Amelita Stanislaus
Amelita Stanislaus

9 RESIDENCE No. 215 Hoosac St. Adams

10 RESIDENCE No. 215 Hoosac St. Adams

11 COLOR OR RACE White AGE 32 YEARS

12 COLOR OR RACE White AGE 20 YEARS

13 BIRTHPLACE Poland

14 BIRTHPLACE Poland

15 OCCUPATION Mill worker

16 OCCUPATION Housewife

17 Signature of Attendant at birth _____

Address No. _____ St. _____

Dated April 6th 1922

Did above-named personally attend the birth? _____

18 Received at office of city or town clerk _____

19 A true copy. Attest: _____

REGISTRAR

GENERAL LAWS, CHAP. 46, SEC. 3.

Every physician, or hospital medical officer registered under section nine of chapter one hundred and twelve, in this chapter called officer, shall keep a record of the birth of every child in cases of which he was in charge, showing date and place of birth, the name, if any, of the child, its sex and color, the name, age, birthplace, occupation and residence (including the street number, if any, and the ward number, if in a city) of each parent, the maiden name of the mother and the name of the physician or officer, if any, personally attending the birth. If the child is illegitimate, the name of and other facts relating to the father shall not be set forth except upon written request of both the father and mother. Said physician or officer shall, within fifteen days after such birth, mail or deliver to the clerk or registrar of the town where such birth occurred, a report stating the facts hereinabove required to be shown on said record and also the said written request, if any; provided, that if said report is not so made within forty-eight hours after such birth, said physician or officer shall, within said forty-eight hours, mail or deliver to said clerk or registrar a notice stating the date and place of the birth, the street number, if any, the ward number, if in a city, and the family name. Upon presentation to him of a certificate of the town clerk stating that any such birth has been duly reported, the town treasurer shall pay to such physician or officer a fee of twenty-five cents for each birth so reported. Any physician or any such officer violating any provision of this section shall forfeit not more than twenty-five dollars.

GENERAL LAWS, CHAP. 46, SEC. 6.

Parents, within forty days after the birth of a child, and every householder, within forty days after a birth in his house, shall cause notice thereof to be given to the clerk of the town where such child is born * * *.

The Commonwealth of Massachusetts

OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS**CERTIFICATE OF MARRIAGE****1 PLACE OF MARRIAGE***This certificate must be delivered to the person before whom the marriage is to be contracted before he proceeds to solemnize the same.*

(City or town making return)

City or Town.....
(Do not enter name of village or section
of city or town)**2 Date of Marriage**.....
(Month) (Day) (Year)**Registered No.**.....**Intention No.**.....**GROOM****3 FULL
NAME****4 AGE AT LAST
BIRTHDAY**.....
(Years)**5 COLOR****6 RESIDENCE
AT TIME OF
MARRIAGE****7 NUMBER OF
MARRIAGE**
(1st, 2d, 3d, etc.)**8 SINGLE, WIDOWED,
OR DIVORCED****9 OCCUPATION****10 BIRTHPLACE**

(City or town)

(State or country)

**11 NAME OF
FATHER****12 MAIDEN NAME
OF MOTHER****BRIDE****13 FULL
NAME**

(If a widow or divorced, give also maiden name)

**14 AGE AT LAST
BIRTHDAY**.....
(Years)**15 COLOR****16 RESIDENCE
AT TIME OF
MARRIAGE****17 NUMBER OF
MARRIAGE**
(1st, 2d, 3d, etc.)**18 SINGLE, WIDOWED,
OR DIVORCED****19 OCCUPATION****20 BIRTHPLACE**

(City or town)

(State or country)

**21 NAME OF
FATHER****22 MAIDEN NAME
OF MOTHER****23 THE INTENTION OF MARRIAGE** by the above-named persons was duly entered by me in the records of the.....
(City or town)of..... according to law, this..... day of..... 19.....
(Name of city or town)Certificate issued..... by.....
(Month) (Day) (Year) (City or Town Clerk or Registrar)**24 I HEREBY CERTIFY** that I joined the above-named persons in marriage at No..... St.,
(If marriage was solemnized in a church, give its NAME
instead of street and number)Ward..... on.....
(Name of city or town) (Month) (Day) (Year)Name..... Official station.....
(Minister of the Gospel, Clergyman, Priest, Rabbi,
or Justice of the Peace)

Residence No..... St., City or town of.....

25 Certificate received by city or town clerk.....
(Month) (Day) (Year) **CITY OR TOWN CLERK OR REGISTRAR**

MARGIN RESERVED FOR BINDING

N. B.—WRITE PLAINLY, WITH UNFADING BLACK INK—THIS IS A PERMANENT RECORD. Every item of information should be carefully supplied. ALTERATIONS AND ERASURES IN THIS CERTIFICATE ARE FORBIDDEN; PENALTY FOR VIOLATION, ONE HUNDRED DOLLARS. See reverse side for extracts from the laws relating to the RETURN OF MARRIAGES.

EXTRACTS
FROM THE LAWS OF THE
COMMONWEALTH OF MASSACHUSETTS
RELATING TO
MARRIAGES

On or after the fifth day from the filing of notice of intention of marriage, except as otherwise provided, the clerk or registrar shall deliver to the parties a certificate signed by him, specifying the date when notice was filed with him and all facts relative to the marriage which are required by law to be ascertained and recorded, except those relative to the person by whom the marriage is to be solemnized. Such certificate shall be delivered to the minister or magistrate before whom the marriage is to be contracted, before he proceeds to solemnize the same. If such certificate is not used, it shall be returned to the office issuing it within six months after it is issued. — *General Laws, Chap. 207, Sec. 28.*

No alteration or erasure shall be made by any person on the certificate under section twenty-eight until it has been returned to the clerk or registrar, and then only in such form and to such extent as he may prescribe. Any such certificate may be recorded after correction in accordance herewith. — *General Laws, Chap. 207, Sec. 31.*

A marriage may be solemnized in any place within the commonwealth by a minister of the gospel, ordained according to the usage of his denomination, who resides in the commonwealth and continues to perform the functions of his office; by a rabbi of the Israelitish faith, duly licensed by a congregation of said faith established in the commonwealth, who has filed with the clerk or registrar of the town where he resides a certificate of the establishment of the synagogue, the date of his appointment thereto and of the term of his engagement; by a justice of the peace if he is also clerk or assistant clerk of a town, or a registrar or assistant registrar, in the town where he holds such office, or if he is also clerk or assistant clerk of a court, in the city or town where the court is authorized to be held, or if he has been designated as provided in the following section and has received a certificate of designation and has qualified thereunder, in the town where he resides; and it may be solemnized among Friends or Quakers according to the usage of their societies; but no person shall solemnize a marriage in the commonwealth unless he can read and write the English language. — *General Laws, Chap. 207, Sec. 38.*

The governor may in his discretion designate a justice of the peace in each town and such further number, not exceeding one for every five thousand inhabitants of a city or town, as he considers expedient, to solemnize marriages, and may for cause at any time revoke such designation. The state secretary, upon payment of five dollars to him by a justice of the peace so designated, shall issue to him a certificate of such designation. — *General Laws, Chap. 207, Sec. 39.*

Every justice of the peace, minister, rabbi and clerk or keeper of the records of a meeting wherein marriages among Friends or Quakers are solemnized shall make and keep a record of each marriage solemnized by him, or in such meeting, and of all facts relative to the marriage required

to be recorded. . . . He shall also, between the first and tenth days of the month following each marriage solemnized by him, return each certificate . . . to the clerk or registrar who issued the same; and if the marriage was solemnized in a town other than the place or places where the parties to the marriage resided, return a copy of the certificate, or of either certificate if two were issued, to the clerk or registrar of the town where the marriage was solemnized. Each certificate and copy so returned shall contain a statement giving the place and date of marriage, attested by the signature of the person who solemnized the same or of said clerk or keeper of the records of a Friends or Quaker meeting. The person who solemnized the marriage shall add the title of the office by virtue of which the marriage was solemnized, as "justice of the peace", "minister of the gospel", "clergyman", "priest", or "rabbi", and his residence. All certificates or copies so returned shall be recorded by the clerk or registrar receiving them. — *General Laws, Chap. 207, Sec. 40.*

Whoever, not being duly authorized by the laws of the commonwealth, undertakes to join persons in marriage therein shall be punished by a fine of not more than five hundred dollars or by imprisonment for not more than one year, or both. — *General Laws, Chap. 207, Sec. 43.*

Whoever, being duly authorized to solemnize marriages in the commonwealth, joins in marriage persons who have not complied with the laws relative to procuring certificates of notice of intention of marriage shall be punished by a fine of not more than five hundred dollars. — *General Laws, Chap. 207, Sec. 49.*

Whoever makes an illegal alteration or erasure on a certificate of intention of marriage shall be punished by a fine of not more than one hundred dollars. — *General Laws, Chap. 207, Sec. 54.*

Whoever performs a ceremony of marriage upon a certificate more than six months after its issue, and whoever having taken out such certificate and not having used it fails to return it, within six months after its issue, to the office issuing the same, shall be punished by a fine of not more than ten dollars. — *General Laws, Chap. 207, Sec. 57.*

The clerk of each town, and of each city containing less than thirty thousand inhabitants, annually, on or before March first, the clerks of cities containing more than thirty thousand and less than one hundred thousand inhabitants, annually, on or before April first, and the clerks of cities containing one hundred thousand inhabitants or more, annually, on or before May first, shall transmit to the state secretary certified copies of the records of marriages recorded therein during the preceding year, with certified copies, upon blanks provided by him, of such records and corrections in such records as have not been previously returned. — *General Laws, Chap. 46, Sec. 17.*

The state secretary shall require and town clerks shall cause copies transmitted under the preceding section to be written in a legible hand. — *General Laws, Chap. 46, Sec. 18.*

Vital Records should be correct and complete when presented to the city or town clerk for filing. They must be written legibly, in durable blackink, otherwise the city or town clerk is instructed to REFUSE TO ACCEPT THEM FOR RECORD. No certificate with erasures or written in pencil should be accepted under any circumstances.

FORM R-6

1 PLACE OF BIRTH

The Commonwealth of Massachusetts
OFFICE OF THE SECRETARY
DIVISION OF VITAL STATISTICS

Adams

(City or town)

COPY OF RETURN OF A BIRTH

(See instructions in margin)

County of

Registered No. Registered No.

(Place of birth)

(Residence of parents)

City or
Town ofNo. St. Ward
(If birth occurred in a hospital or institution, give its NAME instead of street and number){ If child is not yet named, make
supplemental report, as directed

2 FULL NAME OF CHILD

3 Sex of Child	4 Twin, triplet, or other ? (To be answered only in event of plural births)	4a Number in order of birth	5 Born alive or still-born	6 Date of birth (Month) (Day) (Year)
7 FULL NAME FATHER			8 FULL MAIDEN NAME MOTHER	
9 RESIDENCE No. St. (At time the birth occurred) (City or town)			10 RESIDENCE No. St. (At time the birth occurred) (City or town)	
11 COLOR	12 AGE AT LAST BIRTHDAY YEARS (At time the birth occurred)		13 COLOR	14 AGE AT LAST BIRTHDAY YEARS (At time the birth occurred)
15 BIRTHPLACE (City or town) (State or country)			16 BIRTHPLACE (City or town) (State or country)	
17 OCCUPATION			18 OCCUPATION	

19 Attendant at birth or informant (If there was no physician or midwife attendant, draw line through "attendant at birth or")		(Name)	(Physician, midwife, father, or other)
Address No.		St.	(City or town)
Dated (Month) (Day) (Year)		Did above-named personally attend the birth ?	

20 Received	21 Given name added from a supplemental report
Registrar of city or town where birth occurred	(Month) (Day) (Year)
Received	
Registrar of city or town where parents resided	REGISTRAR

MARGIN RESERVED FOR BINDING
 WRITE PLAINLY, WITH UNFADING BLACK INK - THIS IS A PERMANENT RECORD
 Form R-6 is to be used for births which occurred outside your city or town in case the parents were residents of your city or town at the time the birth occurred. Copies of returns of births which occurred in your city or town in case the parents resided in another city or town at the time the child was born should be transmitted on Form R-6 to the clerk of the city or town in which the parents resided as soon as possible after the close of the month in which the birth occurred. (See Acts of 1919, Chap. 93, Sec. 3.) If your canvasser obtains from parents now living in your city or town a birth return of a child born in another city or town you should transmit a copy of such birth return on Form R-6 to the clerk of the city or town in which the birth occurred.

The blanks used in the reporting of births, deaths, etc are those used by the Commonwealth generally, samples of which are submitted in the previous pages. These are compiled with a great deal of care and thought and leave nothing to be desired in their make up. In addition to the stringent legal requirements for returning these reports, the fact that the local red cross nurse returns a vital statistics report to the board of selectmen is an additional stimulation to the careful collection and recording of statistics.

TUBERCULOSIS STATISTICS

	Number Cases Examined at Clinic	Number Cases Examined by Consultant	Number Cases Found	Number Known Cases	Number Sent to Sanatoria	Number discharged from Sanatoria Arrested	Number Deaths
1917.....	34		25	41	9	5	15
1918.....	83		14	37	14	4	15
1919.....	65		29	54	9	2	17
1920.....	83	42	32	63	11	5	9
1921.....	118	66	44	88	17	5	11
1922.....	168	73	36	116	20	4	5
	551	181	180	399	80	25	72

The work of the Tuberculosis Clinic.

Milk.

The score cards for the dairies of Harold Follett, a town dairy and Fred Bowen, a country dairy are submitted in the following pages.

The conditions at the Follett dairy were excellent; the cows, premises, utensils and milkers were clean and in good condition. The owner of the dairy evidently took a personal pride in the appearance of his dairy, as well as honestly living up to the board of health requirements.

The country dairy here scored was not nearly so presentable. The main features are listed on the score card (copy). Besides stables and cows which were not as clean as they should be, the appearance of the milkers was dirty. The worst features of the dairy, however, was the storage of manure in the same barn that the cows were milked in, and the presence of a water closet in the barn without adequate facilities there for washing of hands after its use.

All milk produced for sale in Adams is produced under the supervision of the inspector of milk, who is the agent of the board of health. He is a veterenary who takes the work seriously and really sees that the dairies are kept presentable. He reports, however, that the board of health does not cooperate with him in the matter, sometimes granting permits to dairies which he has refused because of unsanitary conditions. He issued permits, during the fiscal year, to 41 dairies, 30 peddlers, issued 6 oleomargarine licences, tested 157 samples of milk, and made 96 dairy inspections.

No certified or pasteurized milk is produced.

Copy of Score Card of Official Dairy
Instructors' Association.

BOARD OF HEALTH.
Sanitary Inspection of Dairy Farms.
Score Card.

Owner. Fred Bowen.

P.O. address. Bowen Corner. Adams Mass.

Total number of cows. 24. Number milking 18.

Gallons of milk produced daily. 45.

Product sold to L.R. Lampher, dealer.

For milk supply of Adams.

Date of Inspection, April 17, 1923.

Remarks: Two bad conditions are present in this dairy

(a) The manure is stored below the barn in a kind of basement indefinitely before being hauled out to the fields.

(b) There is in the milking stable a water closet for the use of the milkers, but there is no special facility for washing of hands after the use of this closet. This is conducive to filthy milking habits.

Equipment		Methods.	
Cows.		Cows	
Health	1	Clean	4
Food	1		
Water	1	Stables	
Stables		Clean	4
Location	1	Air	4
Construction	3	Bedding	1
Light	2	Barneyard	2
Bedding	1	Manure removal	0
Ventilation	2		
Utensils		Milk room.	
Construction	1	Clean	2
Water	1		
Small top pail	0	Utensils.	
Milk Cooler	1	Care	5
Clean suits	0	Cleanliness milking	5
Milk House.			
Surroundings	1	Handling. the milk.	
Construction	2	Attendants	1
Washing room	1	Removal of milk	2
Hot water	.5	Cooled	5
Total	19.5	Stored	1
		Transportation	0
		Total	36

Final Score 55.5

Score Card of the Harold Follett Dairy.

EQUIPMENT.	SCORE.		METHODS.	SCORE.	
	Perfect.	Allowed.		Perfect.	Allowed.
COWS.			COWS.		
Health.....	6	81	Clean.....	8	6
Apparently in good health.....	1		(Free from visible dirt, 6.)		
If tested with tuberculin with- in a year and no tubercu- losis is found, or if tested within six months and all reacting animals removed.....	5		STABLES.		
(If tested within a year and re- acting animals are found and removed, 3.)			Cleanliness of stables.....	6	5
Food (clean and wholesome).....	1	1	Floor.....	2	
Water (clean and fresh).....	1	1	Walls.....	1	
STABLES.			Ceiling and ledges.....	1	
Location of stable.....	2	2	Mangers and partitions.....	1	
Well drained.....	1		Windows.....	1	
Free from contaminating sur- roundings.....	1	4	Stable air at milking time.....	5	4
Construction of stable.....	4		Freedom from dust.....	3	
Tight, sound floor and proper gutter.....	2		Freedom from odors.....	2	
Smooth, tight walls and ceiling	1		Cleanliness of bedding.....	1	1
Proper stall, tie and manger.....	1		Barnyard.....	2	2
Provision for light: Four sq. ft. of glass per cow.....	4	2	Clean.....	1	
(Three sq. ft., 3; 2 sq. ft., 2; 1 sq. ft., 1. Deduct for uneven distribution.)			Well drained.....	1	
Bedding.....	7	1 1/2	Removal of manure daily to 50 feet from stable.....	2	2
Ventilation.....			MILK ROOM OR MILK HOUSE.		
Provision for fresh air, con- trollable flue system.....	3		Cleanliness of milk room.....	3	2
(Windows hinged at bot- tom, 1.5; sliding windows, 1; other openings, 0.5.)			UTENSILS AND MILKING.		
Cubic feet of space per cow.....	3	3	Care and cleanliness of utensils.....	8	5
500 ft.....			Thoroughly washed.....	2	
(Less than 500 ft., 2; less than 400 ft., 1; less than 300 ft., 0.)			Sterilized in steam for 15 min- utes.....	3	
Provision for controlling tem- perature.....	1		(Placed over steam jet, or scalded with boiling water, 2.)		
UTENSILS.			Protected from contamination	3	
Construction and condition of utensils.....	1	1	Cleanliness of milking.....	9	9
Water for cleaning.....	1	1	Clean, dry hands.....	3	
(Clean, convenient, and abund- ant.)			Udders washed and wiped.....	6	
Small-top milking pail.....	5	9	(Udders cleaned with moist cloth, 4; cleaned with dry cloth or brush at least fifteen minutes be- fore milking, 1.)		
Milk cooler.....	1	1	HANDLING THE MILK.		
Clean milking suits.....	1		Cleanliness of attendants in milk room.....	2	2
MILK ROOM OR MILK HOUSE.			Milk removed immediately from stable without pouring from pail	2	2
Location: Free from contamina- ting surroundings.....	1	1	Cooled immediately after milking each cow.....	2	
Construction of milk room.....	2	2	Cooled below 50° F.....	5	3
Floor, walls, and ceiling.....	1		(51° to 55°, 4; 56° to 60°, 2.)		
Light, ventilation, screens.....	1		Stored below 50° F.....	3	3
Separate rooms for washing uten- sils and handling milk.....	1	1 1/2	(51° to 55°, 2; 56° to 60°, 1.)		
Facilities for steam.....	1	1 1/2	Transportation below 50° F.....	2	2
(Hot water, 0.5.)			(51° to 55°, 1.5; 56° to 60°, 1.)		
Total.....	40	24	(If delivered twice a day, allow perfect score for storage and trans- portation.)		
			Total.....	60	50

Equipment 24 + Methods 50 = 74 Final Score.

NOTE 1.—If any exceptionally filthy condition is found, particularly dirty utensils, the total score may be further limited.

NOTE 2.—If the water is exposed to dangerous contamination, or there is evidence of the presence of a dangerous disease in animals or attendants, the score shall be 0.

BOARD OF HEALTH

SANITARY INSPECTION OF DAIRY FARMS.

SCORE CARD.

Indorsed by the Official Dairy Instructors' Association.

Owner or lessee of farm Harold Follett.
P. O. address 246 Columbia Rd. State Idaho
Total number of cows 36 Number milking 24
Gallons of milk produced daily 60
Product is sold by producer in families, hotels, restaurants, stores,
to L. B. Lumper dealer.
For milk supply of North Idaho
Permit No. Date of inspection April 17, 19 23

REMARKS:

A very fair dairy for a
small town and considering
that the inspector of milk
reports the Board of Health as
being uncooperative.

(Signed)

Inspector.

Sanitary Nuisances.

There are no special sources of odors in the town.

The only important source of dust is from the streets. This is to a large extent eliminated by keeping the streets in good repair, oiling, and sprinkling with a water sprinkler.

As the town makes a special effort to clean up only once a year it is evident that there is necessarily a large accumulation of rubbish about the back lots and alleys of the town. There is a town dump set aside to receive the gleanings from clean up week, but during the year there are many unsightly rubbish piles about the town.

There are no complaints about flies and mosquitoes, rats and vermin. There was no particular evidence of them.

Stables and manure piles are also cleaned up only once a year unless there is a complaint about any individual ones, in which case the board orders it cleaned up. There are many manure piles in evidence, especially in the back yards of the foreign districts of the town. Undoubtedly these must serve as breeding stations for flies in the summer months and from the ideal sanitary point of view the condition is intolerable.

There are no likely places for mosquitoes to breed, partly owing to the abrupt grades in the topography of the surrounding land.

The town has an anti-smoke law which seems to be adequately enforced. This is quite necessary on account of the number of factories located there.

The chief unnecessary noise nuisance of the town is caused by the automobile cut-out. Not only are speed laws generally disregarded, but the car with a muffler in use is an exception. Automobile laws are in need of stringent enforcement.

Piggeries are not allowed in the fire district, and on complaint, the board will have them abolished.

During the year the board recieved complaints of thirty pig nuisances, 10 hen nuisances, three privy nuisances, two manure nuisances, five sewer nuisances, and ninety rubbish piles.

The board of health has power to rule as to the abolition of these nuisances, and in extreme cases may close up the property to enforce its orders.

Industrial Hygiene.

The townships principal industry is the manufacture of cotton goods, the value of which in 1905 (\$4,621,261) was 84.1% of the value of the townships total factory products; at that time no other place in the United States showed so high a degree of specialization in this industry.

The largest mill for the production of cotton goods is the Renfrew Manufacturing Company, employing 1400 men and producing 30,000,000 yards of finished goods a year.

In general it may be said that the manufacture of cotton goods is divided into four main processes, altho there are many sub-divisions to each of these, all of which vary according to the quality and the type of cloth it is desired to turn out. The processes are picking, spinning, weaving, and dyeing. A great deal of the work of all these procedures is done by specialized machinery, requiring only the supervision of workmen.

The picking process is largely a method of grading, and the selection of the different types of fiber for the different cloths it is desired to produce. This includes the rejection of cotton which is totally unsuitable for milling.

The spinning is carried on by enormous numbers of power spindles which require very little supervision. Aside from the oiling (which also is largely automatic) and care of the machinery, a man is needed to re-connect the spinning thread when it breaks on the spindle, as it frequently does.

The weaving process is carried out by power looms.

The machinery involved in this process is so highly developed that relatively few men are involved, and moving belts are about the only industrial hazard.

The dyeing process is a various, detailed, and intricate one, requiring fine attention to detail and a large number of men to mix and handle solutions. There are a large number of subdivisions to this process. There is a large amount of sodium hydroxide used, the stock solution of which is one of 40%. The superintendant of this process says that there are about three cases a year in which men get this solution into their eyes, resulting in very serious burns.

The Renfrew Mill is situated at the north end of the town, and is a three-story brick structure. It is situated on the narrow level plain next to the river. The buildings are so arranged that the lighting is excellent. The building is equipped with perpendicular fire escapes which are inadequate when one considers that there is a large number of women and girls working in the mills.

The power, which is largely electrical, is obtained from the New England Electrical Company. The motors are enclosed so that moving belts are the only hazard in many of the rooms.

The mill maintains a private water supply, which comes from a small pond on their own ground. This is used in the various dyeing processes and for the men to wash with. It is pumped thru the mill at a pressure of 120 pounds. It also constitutes the mills chief fire protection. It is connected with the town water supply, but the connection is guarded by a check valve, which, when working properly, allows

water to flow into the mill mains from the town mains but not in the reverse direction. A new valve was installed last summer, following the typhoid epidemic. A sprinkler system for fire protection is supplied by the mill water.

There is a humidifying apparatus to keep the air of the mill at a fixed humidity. This appears to be an apparatus with the purpose of staying just within the law, as a high humidity is an advantage commercially in the manufacture of cotton goods, as it makes the cotton fiber more weighty.

The picking room was very dusty, and from the nature of the work, it is always so. As the town has a high tuberculosis rate and as the cases are "almost entirely among cotton mill workers" (Dr. Potter) it seems reasonable to enquire whether the large amount of dust in certain parts of the mill may not play a part in the development of some of these cases.

The spinning room is very hot (averaging about 90) due to the friction of the machinery, as only about 40 people work there.

Workers are employed without a medical examination. Girls of 16 or over are allowed to work full time and girls 14 to 16 are allowed to work part time.

A first aid room is maintained and a full time nurse employed. No doctor is kept at the mill, but is called when a serious accident occurs. The nurse cares for about 2800 cases a year, consisting of 1238 medical cases, 1304 surgical cases, and 355 home cases. There were in the previous year 107 serious accidents requiring a doctor.

The weaving machines are so noisy and there are so many assembled in one room that it is necessary to shout in your neighbor's ear in order to be heard. There are, at present, three cases of "boiler maker's" deafness in this room, i.e., men who hear ordinary conversation in this room without difficulty, but who are markedly hard of hearing outside of the room.

The mill is kept very clean. Floors are swept every night and dirty ones are mopped once a week. No food is allowed in the mill, but the company maintains a community house where employees eat.

The community house is kept up entirely by the company and includes an assembly hall, a stage, ante rooms, a lunch room, a dance hall, a basket ball floor, a movie machine, a ladies' rest room, a magazine room, a news room, billiard tables, and a candy store. As many of the employees live close to the mill, and some of them in company houses adjoining the mill, the community house has developed into the social center of this section of Adams.

The important industrial hazards and poisons of the town are largely those of the cotton goods industry, as that is the town's chief and almost sole industry. The hazards of this industry are very few. The nurse in charge of the Renfrew first aid room said there were "no special hazards".

However, the following are obviously special hazards:

1. Noise. Leading to boiler makers' deafness, of which there are three cases now in the weaving room.
2. Sodium hydroxide burns occur occasionally in the dyeing

rooms. The 40% stock solution of this alkali is not labelled. It is questionable, however, whether labelling would prevent these burns as they are due to accident rather than to ignorance.

3. Contaminated mill water. The mill water is often faceted and signs placed above them (in English) warning the workmen not to drink from them. As many of the workmen are foreign born and not able to read either their mother tongue or English, new workmen are likely to drink from these faucets. The last epidemic of typhoid in Adams was traced to this source by the state board of health. There is a still larger danger to the town if the check valve separating the two water supplies fails to work, thus allowing mill water to be pumped into the town mains.

4. Dust and heat. The high incidence of tuberculosis (pulmonary) among cotton mill workers suggests that these two factors may play apart in the development of these cases.

5. Lime burns. There is, in Adams township, but beyond the confines of the town proper, a lime mill, where the lime itself is a special hazard to the workmen, resulting in lime burns.



Renfrew Manufacturing Company's Mill.



Mill of the Berkshire Cotton Manufacturing Company.



Lime Mill, north of the town, with view overlooking
the valley from the Town Farm.

Housing.

A privately owned tenement inspected was directly across the street from the Adams House, and was inspected because it looked particularly uninviting from the outside. The promise of the exterior was more than fulfilled by the interior.

It was a three story frame building with a somewhat delapidated appearance. The stairs were dark and wretchedly dirty. The rooms were small and poorly lighted and from the walls plaster had fallen in large chunks, exposing considerable areas of lathing. The cold winter air poured freely into the rooms thru these openings, and as there was only stove heat, it was impossible to keep the rooms at a comfortable temperature. There was running water on the middle floor which supplied the other two floors. A man with six children occupied the three rooms of the middle story. The rooms were very dirty. The water closet was apparently installed after the building was erected, for it was established in a little room the only opening into which was the door of entry. It was necessary to strike a match to see how very dirty the place was. In the back lot there was the inevitable collection of ashes and refuse and a dead cat.

Some of the mills, however, maintain a limited number of tenements which are light, clean and roomy. The Berkshire tenements are on the Hoosac River, and a picture of them is here shown.

The Penfrew tenements are close to their mill, two of

which were inspected. Both of these were six room tenements of brick. In one lived a family of seven, in the other three. The heating was done by stove. There was a sink, wash basin, and stool, but no tub. There were gas lights. There were basements. All the rooms had windows and were well lighted. The company rented these houses for \$2.50 per week and hauled away the garbage and ashes.

The town hall was inspected for ventilation. The best summary of the condition is to say that there was no ventilation beyond the occasional entrance of a visitor thru the door. Not only was there no special provision for ventilation, but the appearance and odor of the place was that the simple expedient of opening the windows was rarely or never resorted to. A movie hall occupied the second story of the building, which did not contribute to better ventilation. In the morning when no performance was in progress, instead of allowing the air and light to enter the room, the shades were drawn and the windows tightly closed.



Privately owned tenement in bad sanitary condition.



The Berkshire Mills Tenements.

The requirements for notification of disease in Adams are the same as for the state in general. Such diseases are:

actinomycosis, anterior poliomyelitis, anthrax, asiatic cholera, chicken pox, diphtheria, dog-bite (requiring anti-rabic treatment) amebic and bacillary dysentery, encephalitis lethargica, epidemic cerebro-spinal meningitis, german measles, glanders, gonorrhea, hookworm, ophthalmia, suppurative conjunctivitis, trachoma, influenza, leprosy, pneumonia, malaria, measles, mumps, pellagra, rabies, scarlet fever, septic sore throat, syphilis, smallpox tetanus, trichinosis, tuberculosis, typhoid, typhus, whooping cough and yellow fever.

The quarantine regulations are those of the state.

The methods of disinfection and fumigation used by the board are "soap and water, fresh air and sunlight". If anyone asks for it the board will burn a formaldehyde candle in the rooms, but this procedure is not done as a routine.

The measures taken to prevent the spread of tuberculosis are the establishment of a tuberculosis dispensary, the employment of a visiting nurse, securing the services of a consultant with special training in tuberculosis to aid the dispensary, and the sending of some cases to the state sanatoria.

The dispensary is open two evenings a week when cases are examined. If there are doubtful or suspicious cases they are asked to report again, at which time the visiting consultant examines them.

The visiting nurse sees patients in their homes, supervising the details of their care.

Whenever possible, cases are persuaded to go to the state sanitarium.

Diphtheria is a disease that has been prevalent in Adams. The board is making an effort to control it by Schick testing

all school children and immunizing the susceptible where the consent of the parents can be obtained.

Altho the reporting of venereal diseases is required no attempt is made toward local control or local free treatment. All cases not able or willing to pay for private treatment are sent to Pittsfield, one of the stations for treatment maintained by the state. This is the smallest of the state stations in point of cases treated, having for the year 11 new cases, 94 total cases, a monthly average of total patients of 7.8, giving 417 treatments, including 107 doses of arsphenamine.

Schools.

The schools of Adams consist of a public schools system and one Polish Catholic parochial school. The public schools which take care of 1973 students, are organized on the 6-3-3 plan, i.e., six years of grade instruction, three of junior high school and three of senior high school.

A new Junior High School is being built, including an auditorium and a gymnasium which will be semi-municipal in use, the total group to cost 350,000 dollars. In the planning of this building the physical and health necessities of the children have not been forgotten. The general scheme of heating and ventilation, the generous provision of sanitariums on each floor, the home nursing and emergency rooms, the gymnasium with its showers and rooms for physical directors, nurse, and physician, indicate that the importance of health preservation and encouragement is recognized.

The work of the school nurses has now been extended to the pre-school age.

A home nursing course is now given at the high school in connection with the domestic science department.

There has been recently started a nutrition class at the Renfrew School for the benefit of underweight children. A supplementary diet of milk and crackers is given.

Owing to the reluctance of the city superintendant of schools to grant permission to inspect any of the public schools the Polish Catholic School was inspected. It was a beautiful structure of distinctive architectural design, comparatively new. The building was clean, the halls large, and the lighting

arrangement, except for the basement, excellent. The basement was quite dark. The toilet rooms were reasonably clean.

The rooms for classes were, however, uniformly overcrowded.

The classes averaged eighty-five to ninety-five, making the rooms so hopelessly overcrowded that it was impossible to heat or ventilate the rooms properly, to say nothing of the educational problem of one teacher attempting to teach a class of ninety. The rooms averaged 80 to 90 degrees.

The playgrounds were quite inadequate. The school is built with no allowance for playground between the building and the street. In the rear the playground is barely adequate for fifty or a hundred children instead of the six hundred in the school.

Classes are taught in Polish. There being no incentive to learn English, children graduate from the school not being able to speak English. This is a distinct impediment in the Americanization work of the town.

The medical inspection of school children is carried on by three school physicians and is done on every child once a year. It consists of an examination of vision, weight, ear, eye, nose, throat, (tonsils and adenoids) cervical lymph glands, and chest.

The diseases for which children are excluded from school are "those dangerous to public health".

When necessary the school physicians make occasional visits to the school for matters other than routine examinations. There are two school nurses, one of which is a part time teacher and truant officer. They advise the parents as to the cleanliness and health of the children.



Plunkett Memorial Hospital.



Miscellaneous.

Various markets, barber shops, groceries, kitchens of restaurants and soda fountains. All of these were found to be passably clean; not much better and not much worse than the average of such places in towns of similar size. One criticism of the groceries and provision stores needs to be made however, and that is the old one of the removal of refuse from the rear lots. It is perhaps excusable, where garbage is disposed of daily, to allow ashes to accumulate about private homes from one end of the year to the other, but about a provision store, where so much of the refuse is likely to contain decaying matter, it should be removed frequently. Many of the back yards of the stores inspected showed an accumulation of refuse from an indefinite time.

There is one slaughter house of little importance in the town. During the year they slaughtered 24 beeves, 159 calves, 140 hogs, and 58 sheep. Of this number one beef and six calves were condemned as unfit for human consumption by the board's inspector of slaughtering.

The board of health also has control of the plumbing done in the town, and has an inspector of plumbing to pass on all specifications for plumbing and to make a final inspection when the work is completed.

At one time the board of health had pamphlets published on health subjects, some of which were printed in Polish. This work has been discontinued, which is to be regretted, as a large percentage of the population are uninformed.

The only organization of any importance to public health is the local chapter of the American Red Cross, which has organized a Junior Red Cross, also.

There is no general or comprehensive city planning for the future; the only thing that approaches that is the plan for the completion of the proposed sewer system, and the supervision of the planting of trees.

There is no local administration of the food and drug act.

The W.B. Plunkett Memorial Hospital is a thirtybed hospital consisting of one male and two female wards. It has an excellent equipment, including a fine operating room and X)Ray equipment with fl⁹uoroscope. The town appropriates 17,500 dollars a year to the support of the hospital.

A visit was made to the town farm, between Adams and North Adams, where the old and indigent of the town are kept. It is a very clean and comfortable country farm house, where the old folk seem cheerful and well cared for. The house is heated by furnace heat. A herd of milk cows is kept so that there is always a good supply of milk, and most of the vegetables used are raised in the farm garden.

General Summary.

Adams is a town established in the early period of American history in the Hoosac Valley in the Berkshires. Its population, originally native and Irish, has recieved large additions from the immigration of Canadian French and English, Germans and Poles, so that sixty percent of the population is now foreign. The change in the character of the population has been largely due to the large amount of immigration into the state, and to the fact that Adams is, and for a long time has been, an industrial town.

The health department is adequately organized and is functioning in a creditable manner. It is well financed on the budget system.

The water supply is one of Adams' two chief health problems. Obtaining its water from wells, Bassett Brook and Dry Brook, only the former two of these is safe, as the Dry Brook water shed is contaminated by the pollution from farms along the course of the stream.

Sewage disposal is the other great health problem of the town. Up to the present time sewage has been disposed of by the ancient and simple method of emptying it via short sewers, into the Hoosac River, so that the river, as it flows thru the town, is a highly polluted stream. The present plan for a proposed sewerage system is ^eadaquate, but construction has been slow and the condition of the river in the town is little if any better now than in 1908, when the present plan was proposed.

Much of the garbage is removed once a day to the town farm to be fed to hogs, leaving nothing to be desired in the way of garbage disposal. Refuse and ashes, however, are allowed to accumulate indefinitely and are removed once a year during clean-up week. Manure piles from the many barns in the town are very objectionable, especially during the summer months.

The vital statistics of the town show a high incidence, as compared to the state, of tuberculosis, diphtheria, typhoid, scarlet fever, and whooping cough. As all of these are in a varying degree controllable, either by isolation or by specific methods, their high incidence is a challenge to the health department and to the people of the town. This challenge is being met by a tuberculosis dispensary and home nursing for the tuberculous, and by the application of the Schick test to school children.

The milk supply of the town is carefully supervised by an inspector of milk. It is satisfactory.

The chief sanitary nuisances of the town are manure piles and noisy automobiles.

The chief, and almost the only, industry of the town is the manufacture of cotton goods. Altho the industrial hazards of the cotton mills are few, the existence of a double water system in the mills has increased the incidence of typhoid, partly because the private supply has been fauceted and inadvertently taken for drinking water, ^eIt is well to remember also that the system of separating the contaminated private supply from the purer town supply by a check valve is a fallible system.

The housing conditions are, with individual exceptions, adequate and good.

The notification and control of infectious diseases is essentially the same as in other towns of the state. In addition the town has established a dispensary and nursing service for the control of tuberculosis, which is especially high among the cotton mill workers.

The public schools have an adequate system of medical inspection of the schools and children. There are three school doctors and two school nurses. The parochial school, almost entirely Polish, is overcrowded.

The board of health does not at the present time publish or distribute educational pamphlets.

The town has well designed hospital with excellent equipment. The hospital ^{li}receives an appropriation from the town and is partly endowed.

Recommendations.

In view of the facts brought to your attention in the preceeding report, the following recommendations are made:

1. The establishment of a pre-natal clinic, because of the large foreign population.
2. The frequent removal of manure piles from barn lots in the town, because they cause offensive odors and provide breeding places for flies.
3. The serious consideration of the establishment of a day camp, because very few of the tuberculous of the town are recieving sanitarium training.
4. The freeing of the Dry Brook water shed from sources of contamination, because it is now contaminated.
5. The consideration of the source, time and means of an quantitatively adequate water supply, because the supply is now barely adequate.
6. Careful periodic inspection of check valves separating mill water supplies from the town mains, because the check valve system is a fallible one and can lead to typhoid.
7. Rules prohibiting the fauceting off the mill water supply, or the placarding of these faucetts in English, French, German and Polish, because this system has in the past caused an epedemic of typhoid.
8. Completing the Schick testing of all school children, with the immunization of susceptibles, because of the high incidence of diphtheria.
9. Dick testing and immunization of school children, because of the high incidence of scarlet fever.

Appendix A.

R E P O R T
to the
S E W E R A G E C O M M I T T E E
of the
T O W N O F A D A M S, M A S S.,
upon a
SYSTEM OF SEWERAGE AND SEWAGE DISPOSAL,
by
WILLIAM S. JOHNSON
Consulting Engineer.

1909.

REPORT
of the
NEWARK COMMISSION
of the
CITY OF NEWARK, N. J.
1909
STATE OF NEWARK AND NEWARK BOARD
of
WILLIAM A. MILLER
Governor
1909.

Present Sewers.

There already exist in the town many short sewers which have been constructed from time to time to serve streets where difficulty has been experienced in disposing of the sewage in cesspools. These sewers have not been constructed with a view to making them a part of any general system, but are built solely for the districts which they now serve. They have been constructed without manholes, and in some cases receive ground water and surface water as well as house sewage. No reliable information could be obtained as to the depths or grades of these sewers, but it is evident that in many cases it will be possible to use them temporarily at least in connection with the proposed new system. Eventually, however, these old sewers must be replaced by new ones, or new sewers can be constructed to receive the house sewage, the present drains being retained for the removal of storm water.

The present sewers discharge into the river or into tributary streams at the most convenient points, and the outlets are in many cases close to population and so located as to create offensive conditions in the vicinity. In some cases the brooks into which the sewage is discharged do not flow during the summer months so that the streams become open sewers flowing through a densely populated district.

Topography.

The town of Adams extends approximately 4.5 miles north and south, and 1.5 miles east and west. The Hoosac River which

There already exist in the town many small houses which have been constructed from time to time to serve the needs of the community. It has been experienced in disposing of the sewage in a sanitary manner. These houses have not been constructed with a view to making them a part of any general system, but are built solely for the purpose which they now serve. They have been constructed without connection and in some cases receive ground water and surface water as well as house sewage. No reliable information could be obtained as to the

depth or grades of these sewers, but it is evident that in many cases it will be possible to use them temporarily at least in connection with the proposed new system. Obviously, however, these old sewers must be replaced by new ones, or the town will be forced to receive the house sewage, the present system being retained for the removal of storm water.

The present sewer system is located in the town of Adams, tributary streams at the most convenient points, and the main line are in many cases close to population and as located in the vicinity. In some cases the sewage is discharged to not flow during the summer months so that the stream become open sewers. It is through a densely populated district.

Topography.

The town of Adams extends approximately 4.5 miles north and south, and 1.5 miles east and west. The Adams River flows

flows northerly through the centre of the town is bordered on either side by a comparatively narrow strip of fairly level land, back of which the slopes are steep, rising to the mountains on either side of the river. The thickly populated section of the town is within this narrow strip in the vicinity of the river, and the topography is such that it is likely that the dense population will remain here, only scattered residences being built upon the hills. The river has a rapid fall through the town, the total fall being in the vicinity of 185 feet. There are numerous factories of various kinds, all of which are situated upon or close to the stream.

Population.

In designing a system of sewers it is first necessary to determine the number of persons to be served by the system, both in the beginning and for a reasonable time in the future. The following table shows the population of Adams as given by the census for each census year since 1878, the date of separation of Adams and North Adams:

Year	Population
1880	5,591
1885	8,287

These watersheds through the center of the town is ...
 on either side by a comparatively narrow strip of
 fairly level land, back of which the slopes are steep,
 rising to the mountains on either side of the river. The
 densely populated section of the town is situated on a
 low strip in the vicinity of the river, and the topography
 is such that it is likely that the dense population will
 remain here, only scattered residences being built upon
 the hills. The river has a rapid fall through the town,
 the total fall being in the vicinity of 100 feet. There
 are numerous factories of various kinds, all of which are
 situated upon or close to the stream.

Population.

In designing a system of sewers it is first
 necessary to determine the number of persons to be served
 by the system, both in the existing and for a reasonable
 time in the future. The following table shows the popu-
 lation of Adams as given by the census for each census
 year since 1878, the date of organization of Adams and

North Adams.

Year	Population
1880	4,481
1882	8,282

Year	Population.
1890	9,213
1895	7,837
1900	11,134
1905	12,486

It is common practice to construct sewers of sufficient size to meet the estimated requirements for a period of from thirty to forty years in the future, since a properly constructed system should last for atleast that time. While it is impossible to forecast the growth of a town with any degree of certainty, it is possible to obtain some idea of what may be expected by a study of the past growth of the town, and the growth of other large towns which are similarly situated, and where the conditions in other respects are similar, making due allowances for natural advantages and the proximity to other centres of population which are likely to affect the growth. The following table, giving the estimated population of Adams until 1940, has been carefully prepared in this way; and, while the actual future population of the town may be somewhat different from these estimates, the estimates are sufficiently close to furnish a safe basis for the design of the sewerage system.

Year	Population
1890	9,212
1895	7,387
1900	11,124
1905	12,482

It is common practice to construct a series of
 sufficient size to meet the estimated requirements
 for a period of from thirty to forty years in the
 future, since a properly constructed system should
 last for almost that time. While it is impossible
 to forecast the growth of a town with any degree of
 certainty, it is possible to obtain some idea of what
 may be expected by a study of the past growth of the
 town, and the growth of other towns which are
 similarly situated, and under the conditions in which
 they are situated, making the adjustment for differ-
 ences in advantages and the proximity to other centers of
 population which are likely to affect the growth.
 The following table, giving the estimated population
 of Adams until 1940, has been carefully prepared in
 this way, and, while not perfect, is probably as
 close as can be made, different from some esti-
 mates, the estimates are sufficiently close to the
 actual data for the purpose of the average system.

Year	Estimated Population.
1910	13,800
1915	15,150
1920	16,550
1925	18,000
1930	19,450
1935	20,950
1940	22,450

Quantity of Sewage to be Provided for.

While the number of persons using the sewers is in general the most important factor in determining the quantity of sewage to be provided for, there are other factors which must also be considered. The use made of the sewers by those connected with them varies considerably in different places, the quantity of house sewage in some places being much greater than in others and dependent chiefly on the quantity of water used or wasted in the houses. The volume of manufacturing wastes which must be provided for is in some instances very large, depending on the processes carried on in the factories and facilities for disposing of the wastes in other ways. the leakage of ground water into the sewers depends upon the character of the soil in which they are constructed and the care taken to make tight joints, but in general

Year	Estimated Population
1910	12,000
1915	12,100
1920	12,200
1925	12,300
1930	12,400
1935	12,500
1940	12,600

Quantity of sewage to be provided for.

While the number of persons using the sewage is in general the most important factor in determining the quantity of sewage to be provided for, there are other factors which must also be considered. The use made of the sewage by those connected with their various activities in different places, the quantity of sewage water in some places being much greater than in others and dependent chiefly on the quantity of water used or wasted in the houses. The volume of manufacturing wastes which must be provided for is in some instances very large, depending on the processes carried on in the factories and and facilities for disposing of the wastes in other ways. The quantity of ground water into the sewage system upon the character of the soil in which they are deposited and the water table to which they drain, but in general

the volume of sewage is very materially increased by ground water. Surface water, entering the sewers through manholes or through the house connections, some times is an important factor in determining the quantity of sewage during times of storm or melting snow, but in a properly designed and properly maintained separate system of sewerage the amount of surface water entering the sewers should be very small.

It is impossible to estimate in advance the effect of any of the above factors, as they depend to a large extent upon conditions which cannot be foreseen or controlled. It is only possible to make an approximate estimate of the quantity of sewage to be provided for by a study of the local conditions in the light of experience gained in other places.

It has been found that in a town like Adams, there there are no factories producing great quantities of foul wastes, if the sewers are constructed with care and all possible precautions are taken to prevent an undue amount of leakage of ground water and surface water into the sewers, and if the use of the sewers is confined to the removal of house sewage and manufacturing wastes, the maximum quantity of sewage, including manufacturing wastes and leakage, will amount to about

The volume of sewage is very minutely measured by ground water. Surface water, entering the sewers through channels or through the house connections, does not enter in an important factor in determining the quantity of sewage during times of storm or melting snow, but in a properly designed and properly maintained sewerage system of sewage the amount of surface water entering the sewers should be very small.

It is impossible to estimate in advance the effect of any of the above factors, as they depend to a large extent upon conditions which cannot be foreseen or controlled. It is only possible to make an approximate estimate of the quantity of sewage to be provided for by a study of the local conditions in the light of experience gained in other places.

It has been found that in a town like Adams, there there are no factories producing great quantities of foul wastes, if the wastes are dealt with in some way all possible precautions are taken to prevent an undue amount of leakage of ground water and surface water into the sewers, and in the use of the sewers is confined to the removal of house sewage and rainwater. In the case of the maximum quantity of sewage, including non-flushing wastes and leakage, will amount to about

150 gallons per person per day when the sewers come into general use. This maximum flow occurs generally in the spring when the level of the water in the ground is high and the leakage into the sewers is consequently greatest. The flow in the sewers is not uniform throughout the twenty-four hours of the day, the flow during the night hours being very low and during about eight hours of the daytime being correspondingly high. The maximum hourly flow in a system like that at Adams, which is large enough to equalize any small fluctuations in parts of the system, will be about fifty per cent greater than the average daily flow, so that the maximum hourly flow in the Adams sewers may be expected to be, during the days of maximum flow, at the rate of about 225 gallons per person. Using the figures previously given for the population, this would make the average flow during the days of greatest flow and the maximum hourly flow during these days as shown by the following table.:

Year	Average rate of flow during days of greatest flow.	Maximum rate of flow during days of greatest flow.
1910	2,070,000	3,105,000
1915	2,272,000	3,409,000
1920	2,482,000	3,724,000
1925	2,700,000	4,050,000
1930	2,917,000	4,376,000
1935	3,142,000	4,714,000
1940	3,367,000	5,051,000

100 gallons per person per day when the sewage comes into
 general use. This maximum flow occurs generally in the
 spring when the level of the water in the ground is high
 and the leakage into the sewers is consequently increased.

The flow in the sewers is not uniform throughout the
 twenty-four hours of the day, the flow during the night
 hours being very low and rising about eight o'clock to the
 morning being correspondingly high. The minimum hourly
 flow in a system like that at Idaho, which is large enough
 to equalize any small fluctuations in parts of the system,

will be about fifty per cent greater than the average
 daily flow, so that the maximum hourly flow in the system
 sewers may be expected to be, during the days of maximum
 flow, at the rate of about 100 gallons per person. Using
 the figures previously given for the population, this would
 make the average flow during the days of greatest flow and
 the maximum hourly flow during these days as shown by the

Table with results:

Year	Average rate of flow during days of greatest flow.	Maximum rate of flow during days of greatest flow.
1910	2,070,000	3,100,000
1911	1,730,000	2,600,000
1912	1,460,000	2,200,000
1913	2,700,000	4,000,000
1914	2,770,000	4,100,000
1915	2,770,000	4,100,000
1916	2,770,000	4,100,000
1917	2,770,000	4,100,000
1918	2,770,000	4,100,000
1919	2,770,000	4,100,000

Disposal.

The simplest method of disposing of the sewage would undoubtedly be to discharge it into the Hoosac River at various points in its course through the town. This method of disposal, however, is entirely out of the question, as the sewage discharged into the river is sufficient, even at the present time, to create a nuisance in the village. Another method would be to collect all the sewage in a trunk sewer and convey it to some point below the thickly settled portion of the town, where it might be discharged into the river through a properly located outlet without creating a local nuisance. If this method of disposal is objectionable, or if the discharge of sewage directly into the river is not approved by the State authorities, it will be necessary to construct purification works and to remove from the sewage, before it enters the stream, some of the polluting matters which it contains.

The Hoosac River at the line between Adams and North Adams has a watershed of 6 $\frac{1}{2}$ square miles. Much of the watershed is mountainous, and the water falling upon the steep slopes runs off quickly, which tends to increase the freshet flows and to make the dry weather flows very low. There are, however, storage reservoirs of considerable size on the stream above Adams from which water is drawn during the summer, which tends to equalize the flow to a considerable extent, and to make the dry weather flow larger than it would

Proposal.

The primary object of this proposal is to provide a permanent and satisfactory method of disposing of the sewage of the town of North Adams. It is proposed that the sewage be collected in a system of pipes and conveyed to a point below the town where it can be discharged into the river. This method is proposed as being the most economical and the most effective. It is also proposed that the sewage be treated in a tank before being discharged into the river. This treatment is necessary to prevent the sewage from polluting the river. The cost of this proposal is estimated to be \$10,000. It is proposed that the town of North Adams should contribute \$5,000 and the State should contribute \$5,000. It is also proposed that the town of North Adams should be responsible for the maintenance of the system.

The sewage of the town of North Adams is at present discharged into the river at a point just below the town. This method is not only unsightly but it is also very objectionable to the people of the town. It is also very objectionable to the people of the State. It is proposed that the sewage be collected in a system of pipes and conveyed to a point below the town where it can be discharged into the river. This method is proposed as being the most economical and the most effective. It is also proposed that the sewage be treated in a tank before being discharged into the river. This treatment is necessary to prevent the sewage from polluting the river. The cost of this proposal is estimated to be \$10,000. It is proposed that the town of North Adams should contribute \$5,000 and the State should contribute \$5,000. It is also proposed that the town of North Adams should be responsible for the maintenance of the system.

naturally be. The flow during a dry period, which is the only period which it is necessary to consider in connection with sewage disposal, has been estimated by the State Board of Health, after a careful study of the effect of the storage reservoirs, to be about .27 of a cubic foot per second per square mile of watershed. This would make the dry weather flow at the North Adams line 17 cubic feet per second.

The quantity of water required in a stream to dilute sewage to such an extent that it will not create a nuisance, after it has been thoroughly mixed with the water of the stream, is from 2.5 cubic feet to 6 cubic feet per second per 1000 persons discharging sewage into the stream, depending upon the character of the stream below the point of discharge and the quantity and character of the manufacturing wastes which the stream receives with the sewage. A stream with a fluctuating level, with considerable areas of bottom exposed at times, or with shallow mill ponds, requires a much larger quantity of water to properly dilute sewage than does a stream with steep banks furnishing no opportunity for the deposit of sewage matter where it would cause trouble.

The Hoosac River for some distance below Adams does not furnish opportunities for the deposition of solid matter from the sewage, but flows at times of dry weather between well defined banks with a good velocity. It will, therefore, probably be capable of diluting the sewage of 1000 persons for

naturally is. The first thing is to find out what is the
only thing which it is necessary to consider in connection
with sewage disposal, and that is, the health of the
people, after a careful study of the effect of the sewage
reservoir, to be about .25 of a mile from the reservoir
and the side of watershed. This would make the city
flow at the North Adams line 17 cubic feet per second.
The quantity of water required is a matter of
little consequence to such an extent that it will not matter
much. After it has been thoroughly mixed with the water of
the stream, in from 2.5 cubic feet to 5 cubic feet per second
per 1000 persons discharging sewage into the stream, depend-
ing upon the character of the stream below the point of dis-
charge and the quantity and character of the water entering
the stream from the stream reservoir with the sewage. A stream
with a fluctuating level, with considerable areas of water
exposed at times, or with smaller will ponds, requires a much
larger quantity of water to properly dilute sewage than one
a stream with steep banks furnishing no opportunity for the
deposition of sewage matter where it would cause trouble.
The sewage river for some distance below the dam has
one further opportunity for the deposition of sewage matter
than the sewage, but there is time of the water before it
reaches the river with a great velocity. It is, therefore, not
likely to cause any trouble at the dam or below the dam.

3.0 cubic feet per second flowing in the stream so long as it receives no large quantities of foul manufacturing wastes. Upon this basis, the Hoosac River at the North Adams line would be capable of diluting the sewage of about 6000 persons. The number of persons at present discharging sewage directly into the stream is less than this, and it is safe to assume that, until the sewers are in much more general use than at present, the sewage can be discharged into the river without purification. The State Board of Health in 1902, when the conditions were not very different from those existing at the present time, found that the pollution of the river at Adams did not render the conditions of the stream objectionable, except for a short distance below the village.

The only community that would be noticeably affected by the discharge of the sewage of Adams into the river as suggested would be the city of North Adams, through the centre of which the river flows. In its course through North Adams it is a highly polluted stream. It is obvious that it would not be reasonable for the town of Adams at a considerable expense to purify its sewage before discharging it into the river until steps are taken to remove the much more serious pollution which is caused by the sewage of North Adams. With the general introduction of sewers in the town, however, it is probable that the amount of sewage will very soon become so great that the river cannot dilute it during dry seasons to such an extent that it will not be offensive, and it is evident that at some time in the future the sewage

of the town must be purified before it is discharged into the river.

I have, therefore, designed the sewerage system with a view to eventually purifying all of the sewage before it is discharged into the river, but the system has been planned with a view to discharging the sewage into the river temporarily from one outlet about 750 feet below Line Street. The discharge of sewage at this point will not create objectionable conditions in the vicinity of the outlet, since there are no houses near the river and there are no dams for a long distance below this point. When purification works become necessary the main sewer will be extended to a point near the North Adams line, and a short length of the outlet sewer will at that time be abandoned.

Collection System.

Since the sewage of the town must be purified at some time in the near future, it is evident that the quantity of sewage should be kept as small as possible. To this end surface water and all wastes which can be discharged directly into the stream without creating offensive conditions should be kept out of the sewers, and every effort should be made to have the new sewers tight to prevent the leakage of ground water into them. No roofs, yard or cellars should under any circumstances be connected with the sewers, and the liquid in the sewers should consist only of the foul wastes which require removal from houses and factories.

of the town may be purified before it is discharged into the river.

I have, therefore, designed the sewerage system with a view to eventually purifying all of the sewage before it is discharged into the river, but the system has been designed with a view to absorbing the sewage into the river immediately from a point about 750 feet below town street. The distance of sewage at this point will not create objectionable conditions in the vicinity of the outlet, since there are no houses near the river and there are no dams for a long distance below this point. When purification works become necessary the main sewer will be extended to a point near the North Adams line, and a short length of the outlet sewer will at that time be constructed.

Collection System.

Since the sewage of the town may be purified at some time in the near future, it is evident that the quantity of sewage should be kept as small as possible. To this end surface water and all waste water can be discharged directly into the stream without creating offensive conditions should be kept out of the sewers, and every effort should be made to have the new sewers tight to prevent the leakage of ground water into them. No rain, yard or cellar water should enter any sewerage system connected with the sewers, and the liquid in the sewers should consist only of the toilet wastes which require removal from houses and factories.

The topography of the town is such that the collection of the sewage is not difficult, and no deep cuts or expensive lines will be necessary. The main sewer, following the river in a general way, will collect all of the sewage from both sides of the stream with only comparatively short branch sewers. It will be necessary in some cases for the main sewer to leave the highway and cross private property, and in one case it will be laid in the bed of the river.

The main sewer, as planned, will start at the factory of the Spool and Bobbin Company, in the southerly part of the town not far from the Cheshire line, follow Grove Street to the bridge over the railroad. Here it will leave the present highway and follow the line of the old highway across the river, being laid beneath the bed of the stream, and entering the highway again just below the river crossing; thence it will follow Grove Street to a point opposite the Renfrew Manufacturing Company, just south of the bridge over the river, where it will leave the highway and follow the right bank of the river for a short distance, and thence along the bed of the stream to a point near the dam of the Plunkett Mill. Here it will leave the river and follow the left bank of the stream into the yard of the Plunkett Mill, thence, crossing beneath the bed of the stream, into Glenn Street, and thence to Commercial Street.

The topography of the town is such that the collection of the sewage is not difficult, and no deep cuts or conduits will be necessary. The main sewer, following the river in a general way, will collect all of the sewage from both the other stream with only comparatively short branch sewers. It will be necessary in some cases for the main sewer to leave the right way and cross private property, and in one case it will be built in the bed of the river.

The main sewer, as planned, will start at the factory at the school and school property, in the southerly part of the town not far from the electric line, follow Grove Street to the bridge over the railroad. Here it will leave the present highway and follow the line of the old highway across the river, below the bridge beneath the bed of the stream, and following the railway grade just below the river crossing; thence it will follow Grove Street to a point opposite the Henshaw Manufacturing Company, just south of the bridge over the river, where it will leave the highway and follow the right bank of the river for a short distance, and thence along the bed of the stream to a point near the bar of the Olmsted Mill. Here it will leave the river and follow the right bank of the stream into the west of the Olmsted Mill, thence crossing beneath the bed of the stream, into Glen Street, and thence to Commercial Street.

The departure from the highway, from the Renfrew Mill to the Plunkett Mill, is made necessary by the rise in Commercial Street in the vicinity of Pearl Street, and where laid in the bed of the river it will be necessary to construct the sewer of cast iron pipe.

From Glenn Street the main sewer will follow Commercial Street to Dean Street, passing beneath the river just above the Brown Paper Mill; thence along Dean Street, where it will again cross the river; thence along Spring Street and Gaven Avenue to Bedell Lane, where it will pass beneath the bed of the river to Winter Street. The sewer will then follow along the easterly side of the river through Winter, Hoosac, Mill, Murray and Crotteau Streets to Cook Street, where it will cross the river to Columbia Street, following Columbia Street to Friend Street, where, on account of the rise in the grade of Columbia Street, it will be necessary to pass through private property between Columbia Street, and the railroad, across Line Street to a point about 600 feet north of Lime Street where the temporary outlet to the river will begin. This temporary outlet will cross private property for a distance of 400 feet to a point below the gates of the Berkshire Hills Paper Company. Since it is certain that this outlet can only be temporary, and must be abandoned when the quantity of sewage becomes considerably greater than it is now, the capacity

and departure from the highway, from the Parkway Hill
 to the Pleasant Hill, is made necessary by the rise in con-
 siderable street in the vicinity of Park Street, and there
 laid in the bed of the river it will be necessary to construct
 and never of cast iron pipe.
 From Glanville Street the main sewer will follow Glanville
 Street to Dean Street, passing beneath the river just above the
 Green Paper Mill; thence along Dean Street, where it will cross
 cross the river; thence along Spring Street and Green Street to
 Gedell Lane, where it will pass beneath the bed of the river to
 Water Street. The sewer will then follow along the easterly
 side of the river thence Water Street, Market Street, and
 Grover Street to Cook Street, where it will cross the river to
 Columbia Street, following Columbia Street to Friend Street, where
 on account of the rise in the grade of Columbia Street, it will be
 necessary to pass through private property between Columbia Street
 and the railroad, across line street to a point about 500 feet
 north of line street where the temporary outlet to the river will
 begin. This temporary outlet will cross private property for a
 distance of 400 feet to a point below the gate of the reservoir.
 This Paper Company. Since it is certain that this outlet can
 only be temporary, and must be abandoned when the opening of
 sewage becomes permanently closed then it is best the outlet

of this sewer can be made smaller than the main sewer which is designed to last until 1940. The main sewer in Columbia Street will be 24 inches in diameter. The outlet sewer need be only 18 inches in diameter. The permanent line of the main sewer will continue across private property near the Berkshire Hills Paper Company's pond to a point on Howland Avenue near Brown Avenue, from which point the sewer will be laid in Howland Avenue to a street leading to the Zylonite Station, where it will cross the railroad track to the proposed location of the purification works.

The only principal branch sewers are those at River Street, collecting the sewage from the district in the vicinity of Elm Street and the railroad, and at Hoosac Street, where one sewer entering from the west will collect the sewage from the Maple Street district, and another from the east will collect the sewage from the North Summer Street district.

In places where the sewers pass close to or beneath the river, or where on account of the wetness of the soil it is difficult to make tight joints, the sewers should be constructed of light weight, cast iron pipe with lead joints, and in the estimates which have been made a liberal provision has been made for sewers of this material. While the cost of cast iron pipe is more than the cost of the regular sewer pipe, the cost of laying the former in places where construction is difficult is less than the cost of laying the short pieces of tile pipe with its many joints. In ~~other~~ all other places special precautions should be

of this sewer can be made smaller than the main sewer which is
designed to last until 1940. The main sewer is estimated to cost
\$110,000 in diameter. The outlet sewer need be only 10
inches in diameter. The permanent line of the main sewer will
continue across private property near the Pennsylvania Mills Water
Company's pond to a point on New Jersey Avenue near Brown Avenue,
from which point the sewer will be laid to New Jersey Avenue to
a street leading to the Electric Station, where it will cross
the railroad track to the proposed location of the purification
works.

The only principal sewage works are those at River
Street, collecting the sewage from the district in the vicinity
of Elm Street and the railroad, and at Board Street, where one
sewer entering from the west will collect the sewage from the
Upper Street district, and another from the east will collect
the sewage from the North Street district.

In places where the sewer is laid along the river
the river, or water on account of the sewer at the mill is
difficult to make tight joints, the sewers should be constructed
of light weight, cast iron pipe with lead joints, and in the
places where there have been a liberal provision has been made
for sewage of this material. While the cost of cast iron pipe is
more than the cost of the regular sewer pipe, the cost of laying
the former in places where construction is difficult is less than
the cost of laying the latter along the river with its many
joints. In other places special precautions should be

used to make the joints tight, and the same rule should apply to the house connections.

None of the proposed sewers, even in short side streets where the grades are steep, is less than eight inches in diameter. The difference in cost between a 6 inch and an 8 inch sewer is small, and the troubles from stoppage in the smaller sewers, even on steep grades, are likely to be more numerous and most costly, hence eight inches has been made the minimum size of the sewers. The sewers are designed to carry 225 gallons per person per day from the population which it is expected will use them in 1940, with a liberal provision for manufacturing wastes from factories which are now located or which may hereafter be located in the town.

Manholes are provided at all changes of direction and at all changes of grade. They are also provided at the upper end of every sewer. I would strongly recommend the use of solid man hole covers instead of the common perforated covers. The perforated covers permit the entrance of large quantities of street water, especially at times of melting snow, and they admit much sand and other dirt from the streets which cannot be carried on by the ordinary flow of sewage and must be removed in some other way to prevent the clogging of the sewers. The perforated cover has not the advantages which offset these disadvantages. The use of flush tanks for keeping the sewers clean is not recommended. The sewers can best be cleaned by the use of fire hose connected with a fire

used to make the joints tight, and the same rule should apply to
the loose connections.

None of the proposed sewers, even in short side streets
where the grades are steep, is less than eight inches in diameter.
The difference in cost between a 6 inch and an 8 inch sewer is
small, and the troubles from stoppage in the smaller sewers, even
on steep grades, are likely to be more numerous and more costly.
Hence eight inches has been made the minimum size of the sewers.
The sewers are designed to carry 825 gallons per second per foot
from the population which it is expected will use them in 1950,
with a liberal provision for manufacturing wastes from factories
which are now located or which may hereafter be located in the
town.

Sewerage is provided at all corners of divisions and
at all changes of grade. They are also provided at the street and
at every corner. I would strongly recommend the use of solid man
hole covers instead of the common perforated covers. The perforated
covers permit the entrance of large quantities of street water,
especially at times of falling water, and they admit much rain and
other dirt from the streets which cannot be driven on by the
ordinary flow of sewage and must be removed in some other way to
prevent the clogging of the sewers. The perforated cover has not
the advantages which attend these alternatives. The use of clean
pipes for keeping the sewers clean is not recommended. The sewers
can best be cleaned by the use of the same methods with a view

hydrant.

The question of the advisability of the construction of underdrains beneath the sewers, both to facilitate the construction of the sewers and to provide for lowering the ground water in the vicinity, is a subject which can best be considered when the sewers are constructed. In some towns it has been found advantageous to lay these underdrains, consisting of tile pipe laid with open joints, in such a manner as to collect all of the ground water possible, for the purpose of lowering the ground water level in places where the cellars are wet and the ground is saturated with water not far beneath the surface. When such underdrains are constructed, it is common for them to discharge into the river or any near by water course at the most convenient point, as the water collected by them is not objectionable.

Purification of the Sewage.

When it becomes necessary to keep the sewage out of the river, some method of purification must be adopted. Where the conditions are favorable, there is no system of purification so satisfactory as that known as intermittent sand filtration. Many other processes have been devised, which have given more or less satisfactory results, but where sand or other suitable filtering material is available, there is no method which produces such a high degree of purification at so low a cost and, most important of all, with such certainty as to results, as intermittent sand filtration. The process consists in passing the sewage intermittently through a comparatively thin layer of sand. The process

of purification is accomplished by the aid of bacteria known as nitrifying bacteria, which accumulate in great numbers in the surface layers of the sand, and the intermittent application of the sewage is necessary to allow air to enter the filters between the doses and provide oxygen, without which the purification cannot taken place.

The material in suspension in the sewage is largely strained out and left on the surface of the sand, while the organic impurities which are present in solution are completely changed over to harmless inorganic matter. The matter in suspension which is strained out on the surface of the sand sooner or later clogs the surface, and it becomes necessary to remove this clogging material. During the summer this is easily accomplished by raking, but during the winter months, when the filter beds are covered with ice and snow, it is impossible to rake them, so that there are long periods when the surface of the beds can receive very little attention. It is, therefore, desirable, where the area of the filter beds is limited, and they must be worked to their fullest capacity, to remove as much as possible of this solid material from the sewage before it is discharged upon the beds. This can be accomplished by properly designed settling tanks, through which the sewage is passed at a low velocity, permitting the settling out of the heavier matter, the floating substances being retained in the tank by means of baffles. The solid matter which accumulates in the tanks must be removed from time to time and discharged upon sand

of material is accumulated by the aid of sand which is known as
settling tanks, which accumulate in sand layers in the
surface layers of the sand, and the interest of settling of
the sewage is necessary to allow it to enter the filters between
the tanks and provide oxygen, which is the purification process
known as aeration.

The material in suspension in the sewage is known as
settling out and left on the surface of the sand, with the organic
material which are present in solution are completely changed over
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remove as much as possible of this solid material from the sewage
before it is discharged upon the beds. This can be accomplished
by properly designed settling tanks, through which the sewage is
passed at a low velocity, allowing the settling out of the
heavier matter, the floating substances being retained in the tank
of means of skimmers. The solid matter which accumulates in the
tanks must be removed from time to time and disposed of in some

filters, or rather sand strainers, consisting of a thin layer of sand thoroughly underdrained, where the sludge can be dried to such an extent that it can be carted off and used as a fertilizer.

If the filter beds are properly constructed and properly cared for, there will be no odor from them which will be noticeable at any considerable distance. The chief source of odor in such a plant is the sludge, which, if allowed to remain in the tank for many weeks, becomes "septic" that is, putrefaction begins, and when it is spread out on the filter beds the odor is likely to be very objectionable. If the contents of the tank are removed frequently and nothing but fresh sewage discharged on the beds, there will be no nuisance in the vicinity.

Purification Works Recommended

The area of filters required for the purification of sewage by intermittent sand filtration depends upon the quantity and character of the sewage and the character of the filtering material. If the sewage is not diluted with a large quantity of water and does not contain an excessive quantity of manufacturing wastes, an acre of filters will purify the sewage of from 500 to 1000 persons. If the sand composing the filters is fine and stratified to some extent, the capacity of the filters will be comparatively small. If on the other hand the filters are constructed of selected material which has been handled so that stratification is destroyed, their capacity will be large.

1111. It is rather hard to understand, according to a paper by
some thoroughly unscrupulous, where the latter can be taken to mean
no matter that it can be carried off and made as a fertilizer.
If the latter beds are properly examined and properly
examined, there will be no more than what will be obtained
at any considerable distance. The chief reason of this is that
light is the single, which, it follows to remain in the soil for
many weeks, because "light" that is, polarization bodies, and
when it is spread out on the latter beds and also is likely to be
very objectionable. If the amount of the land are removed pro-
portionally and nothing but these sewage discharged on the beds, there
will be no damage in the vicinity.

Pollution of the River

The river of the River Thames, for the pollution
of sewage is intended and always remains the same
and character of the sewage and the character of the
material. If the sewage is not mixed with a large quantity of
water and does not contain an excessive amount of ammonia
water, an acre of river will carry the sewage of from 100 to
1000 persons. If the same quantity of sewage is mixed with
less to some extent, the capacity of the river will be con-
siderably less. If on the other hand the sewage is concentrated
in a small space which has been loaded on that river, it
destroyed, their capacity will be lost.

There is no area in Adams, or in the vicinity of the town, where sandy soil can be found at such an elevation that the sewage can be discharged upon it by gravity, and there does not appear to be any level area of sandy soil where it would be feasible to construct filter beds to which the sewage might be pumped. There are, however, extensive deposits of sand of excellent quality for sewage purification purposes in the higher land to the west of the river, and the low areas of level land which border the river just above the North Adams line afford an excellent opportunity for the construction of filters at such a level that the sewage of the town can be discharged upon them by gravity. It will be possible at a reasonable expense to construct near the river filter beds of sand taken from the higher banks, the nearest of which is about 2500 feet from the location of the filters. Filters constructed in this way will purify the sewage of from 800 to 1000 persons per acre of filters.

The purification works, as designed, consist of a settling tank having a capacity of 310,000 gallons, twenty-eight sand filter beds having a combined area of 21.7 acres, and six sludge beds having a combined area of 1.5 acres.

The settling tank is to be constructed of concrete masonry with a flat roof of reinforced concrete, and is to be divided into five compartments, each of which will be 60 feet long, 24 feet wide, and to have an average depth of sewage of 5.75 feet.

There is no river in the town, and

there will not be found an elevation that the sewage

can be discharged upon it by gravity, and there has not been

to be any level area of sandy soil where it would be feasible to

construct filter beds to which the sewage might be pumped. There

are, however, extensive deposits of sand at various points for

sewage purification purposes in the higher land to the west of the

river, and the low areas of level land which border the river just

above the North shore line afford an excellent opportunity for the

construction of filters at such a point that the sewage of the town

can be discharged upon them by gravity. It will be possible to

reasonable expense to construct near the river filter beds of sand

to be from the higher land, the amount of which is about 1500 feet

from the location of the filters. Filters constructed in this way

will easily be capable of from 500 to 1000 persons per acre of

filters.

The purification works, as designed, consist of a

settling tank having a capacity of 100,000 gallons, twenty-four

and filter beds having a combined area of 21.7 acres, and the

sludge beds having a combined area of 1.5 acres.

The settling tank is to be constructed of concrete

masonry with a flat roof of reinforced concrete, and is to be 24-

feet into five compartments, each of which will be 20 feet long,

24 feet wide, and to have an average depth of sewage of 2.75 feet.

The capacity of each compartment is 62,000 gallons. The tank is so arranged that any one of the compartments can be thrown out of use for cleaning or for other purposes. A wall extends from the front of the compartment to a point nine feet from the rear wall, which causes the sewage to pass from one end to the other of each tank, and thence back on the other side of the central wall to a gate through which it passes into the next tank. It is possible to discharge the sewage into the upper end of both compartments of a tank at the same time, and to pass it into the next tank at the lower end, thus decreasing the velocity of the sewage. With a flow of sewage amounting to three million gallons per day, the sewage would have a velocity through the tanks of about 4 feet per minute, when one inlet is used, and would remain in the tank two and one-half hours. When two inlets in each tank are used, the sewage would have a velocity of about 2 feet per minute.

Sludge gates are provided through which the contents of the tanks can be discharged upon the sludge beds provided for the purpose. The bottoms of the tanks have a slope toward the sludge outlets, and the outlets are placed at the opposite ends of the tanks from the sewage inlets, so that when a tank is nearly empty sewage can be let in at the upper end, and the sludge can be flushed into the sludge pipes.

The filter beds, as laid out, are in general $3/4$ of an acre in area, separated by embankments of loam or other fine material. Sewage is to be discharged upon each bed through three outlets in order to insure a good distribution over the surface of the bed.

The capacity of each compartment is 15,000 gallons. The time in
an estimated that any one of the compartments can be filled out of
the two adjacent or the other compartment. I will describe the
front of the compartment as a point that is from the front wall,
which across the sewage to pass from the front to the rear of each
compartment, and across back on the rear side of the compartment to a
wall through which it passes into the next compartment. It is possible
to discharge the sewage into the upper and of both compartments of
a tank at the same time, and to pass it into the next tank of the
lower tank. This determines the velocity of the sewage. With a flow
of sewage amounting to three million gallons per day, the sewage
would have a velocity through the tanks of about 4 feet per minute,
when one inlet is used, and would remain in the tank two and one
half hours. When two inlets are used, the sewage would
have a velocity of about 2 feet per minute.

Sludge enters are provided through which the contents
of the tanks can be discharged when the sludge beds are raised for
the purpose. The bottoms of the tanks have a slight upward curvature
collar, and the outlets are placed at the opposite ends of the tanks
from the sewage inlets, so that when a tank is being emptied, sewage
will not be in at the upper end, and the sludge can be removed from
the sludge pipes.

The sludge pipes, as I said, are in position 1/2 ft. from
the bottom, supported by a framework of iron or steel. The sewage
is to be discharged when the sewage level is raised to the
level of the sludge pipes over the outlet of the tank.

The filtering material consists of 3 1/2 feet of sand, and underdrains are provided beneath the sand about thirty feet apart. The underdrains are to be surrounded by gravel and coarse sand, to permit the entrance of water into the pipe through the open joints, at the same time preventing the entrance of the filtering material into the pipes. The undrains will discharge into the river at the most convenient points.

The sludge beds are of similar construction to the filter beds, except that they are smaller and contain a less depth of sand. Six sludge beds are provided having a combined area of 1.5 acres, with 1.5 feet of sand over the underdrains. The contents of one of the compartments of the settling tank will flood one of the sludge beds to a depth of 0.8 of a foot.

The following material is...
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